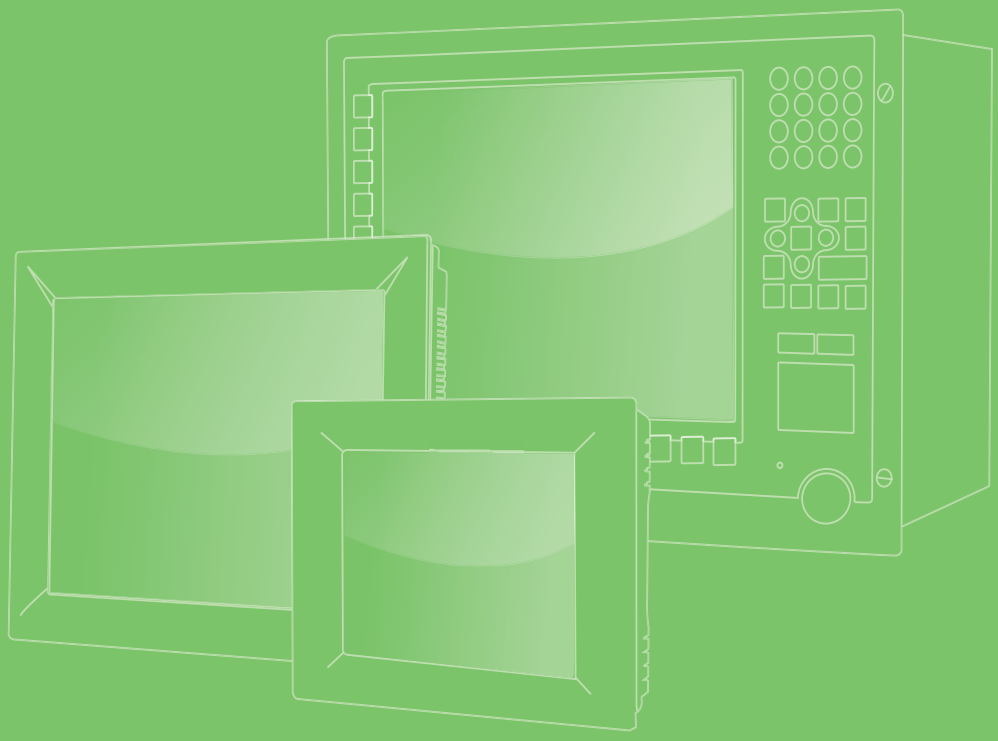

User Manual

TPC-1251T/TPC-1551T
TPC-1251H/TPC-1551H

Industrial Touch Panel Computers with Intel® Atom™ Processors

ADVANTECH

Enabling an Intelligent Planet

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This Manual Covers the Following Models:

- TPC-1251T
- TPC-1551T
- TPC-1251H
- TPC-1551H

Part No. xxxxxxxxxxxxx Edition 1

Printed in Taiwan September 2014

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Attention! Danger d'explosion si la pile est remplacée de façon incorrecte. Remplacez seulement avec le même type ou équivalent recommandé par le fabricant. disposer des piles usagées selon les instructions du fabricant.

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Specifications 2
1.2.1 System Kernel 2
1.2.2 I/O Ports 2
1.2.3 O/S support 2
1.2.4 Safety and Environment 3
1.3 LCD Specifications 3
1.4 Touchscreen Specifications 4
1.5 Power 4
1.6 I/O Ports Arrangement 4
Figure 1.1 I/O Port Arrangement 4
1.7 Panel Mounting 5
1.8 Dimensions and Cutout 5
Figure 1.2 TPC-1251T/TPC-1251H Dimensions 6
Figure 1.3 TPC-1551T/TPC-1551H Dimensions 7

Chapter 2 System Setup 9

2.1 System Setup 10
Figure 2.1 Unpack the Package 10
Figure 2.2 Install CFast Memory Card (Mylar in accessory box can be attached to CFast card for easy extraction) 11
Figure 2.3 Power Connector and Power Lines 11
Figure 2.4 Power Receptor & Button Pin Assignment 12
2.1.1 Installing the Drivers 12
2.2 Transport and Unpacking 13
2.3 Panel Mounting 13
2.4 Cabinet Installation and Earth Grounding setup 14

Appendix A Serial Port Settings 17

A.1 Jumper, Dip switch and Connector location 18
A.1.1 Top 18
A.1.2 Bottom 18
A.2 Jumper setting and Description 19
A.2.1 CMOS Clear Function (CN1) 19
A.3 Switch Setting 19
A.3.1 Termination Resistor Select (SW3) 20
A.4 Connector Pin Definition 20
A.4.1 SATA connector (CN12) 20
A.4.2 SATA Power connector (CN13) 21
A.4.3 Mini PCIE slot (MINIPCIE) 21
A.4.4 CFast slot (CN14) 22
A.4.5 Power in connector (CN18) 22
A.4.6 LAN RJ45 connector (CN7,CN8) 23
A.4.7 USB connector (CN10) 24
A.4.8 COM1 RS232 connector (CN15) 24
A.4.9 COM2 RS232/422/485 connector (CN16) 25

Appendix B Driver Installation and Configuration .. 27

B.1 EC Driver Installation 28

B.2 EC Brightness Control Tool Installation 30
B.3 EC Watchdog Timer Driver Installation 32
B.4 Intel Graphics Driver Installation 36
B.5 Intel Chipset Software Installation Utility Installation 39
B.6 Intel® Trusted Execution Engine Driver Installation 41
B.7 LAN Driver Installation 44
B.8 Windows 7 USB 3.0 Driver Installation 47
B.9 Touchscreen Driver Installation 49
B.10 Touchscreen Calibration 52

Chapter 1

General Information

1.1 Introduction

The TPC-1251T/TPC-1551T & TPC-1251H/TPC-1551H Touch Panel Computers are state-of-the-art Human Machine Interfaces featuring 12" & 15" displays with Intel Atom™ E3827 1.75 GHz Processor

The key features are as follows:

- **True-flat touch screen**
  TPC-xx51T series is true-flat touch screen designed with IP66 front protection.
- **Fanless**
  By using a low-power processor, the system does not have to rely on fans, which often are unreliable and causes dust to circulate inside the equipment.
- **Wide operating temperature**
  TPC-xx51T/H series support -20 ~ 60°C wide operating temperature solution to provide flexibility in harsh environments.
- **Bright Display**
  The TFT LED LCD display suits industrial demands for clear interfaces. Wide Operating Temperature & Isolation Protection.

1.2 Specifications

1.2.1 System Kernel

- **CPU:** Intel® Atom™ E3827 1.75 GHz Processor
- **BIOS:** AMI UEFI BIOS
- **VGA:** Integrated in Intel® Atom™ E3827
- **Ethernet:** 10/100/1000Base-T x 2
- **Watchdog Timer:** EC watchdog timer; 1.0 second timeout period
- **Storage:**
  CFast slot x 1
  2.5" SATA HDD/SSD slot x 1 (optional, accessory TPC-1251T-EHKE required)

1.2.2 I/O Ports

- RS-232 x 1, RS-232/422/485 x 1
- USB 3.0 x 1
- USB 2.0 x 1
- Full-size Mini PCIe Card x1

1.2.3 O/S support

- Microsoft® Windows
  - WES7 32bit/64bit
  - WES8 64bit
  - Windows 7 32bit/64bit
  - Win 8 Industrial 64bit
- Linux Kernel

1.2.4 Safety and Environment

Safety

- FCC Class A
- CE certificated
- The front bezel is compliant with IP66 for true flat models and IP65 for the TPCs with the traditional front bezel

Environment

- **Operating Temperature:**
  - -20 ~ 60° C (-4 ~ 140° F)
- **Storage Temperature:**
  - -30 ~ 70° C (-22 ~ 158° F)
- **Humidity:** 40° C @ 10~95% relative humidity (non-condensing)
- **Vibration:**
  With CFast: 2 Grms (5~500 Hz)
  With HDD: 1 Grms (5 ~ 500 Hz)
  (Operating, random vibration)

1.3 LCD Specifications

	TPC-1251T / TPC-1251H	TPC-1551T / TPC-1551H
Display Type	TFT LED LCD	TFT LED LCD
Size	12.1”	15”
Maximum Resolution	1024 x 768 (XGA)	1024 x 768 (XGA)
Maximum Colors	262K/16.2m	262K/16.7m
Viewing Angle (CR≥10)	160°/140°	160°/140°
Luminance (cd / m2)	600	400
Contrast Ratio	700:1	700:1
Operating Temperature	-30 ~ 80°C	-30 ~ 80°C
Backlight Lifetime	50,000 hours	50,000 hours
Backlight	LED	LED

Note! *There might be several bright or dark pixels on the LCD. This phenomenon is normal in today’s LCD manufacturing. Inspection criteria are following specifications defined by LCD vendor.*

1.4 Touchscreen Specifications

- **Touch Type:** 5- wire Resistive
- **Base Glass Construction:** Tempered glass
- **Resolution:** 1024 x 1024
- **Light Transmission:** 80% ± 3% (Measured by BYK-Gardner)
- **Controller:** USB Interface
- **Lifespan:** 1 million touches at single point

Note! *Touchscreen ITO maybe crash duo to heavy usage .*

1.5 Power

- **Input Voltage:** 24V_{DC} +/- 20% (the fuse will become an open circuit if the input level exceeds 32 V_{DC})
- **Typical:** 24 V_{DC} @ 1.9Amp for 12", 1.7Amp for 15"

1.6 I/O Ports Arrangement

The arrangement of the I/O ports is shown in in Figure 1.1

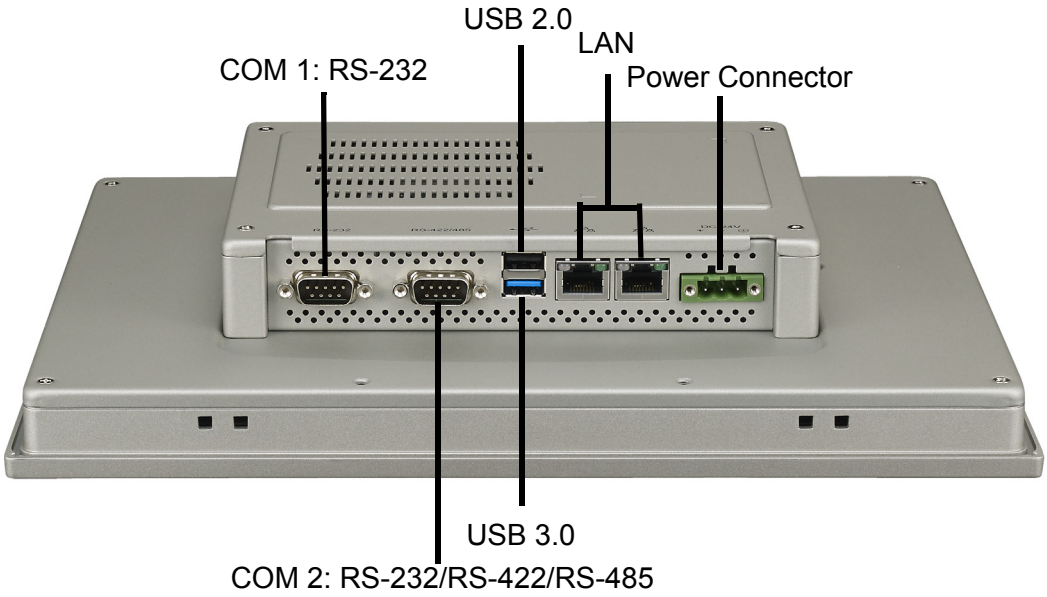


Figure 1.1 I/O Port Arrangement

1.7 Panel Mounting

1. There is a rubber waterproof gasket on the AL front bezel. Make sure the water-proof gasket is in position before installing TPC into the panel opening.
2. Install the TPC into the panel opening.
3. Take the clamps and long screws from the accessory box. Hook the clamps to the holes around the four sides of the bezel. Insert the screws into every clamp and fasten them. These screws will push the mounting panel and fix the unit.
4. The suggested mounting panel thickness is less than 6 mm (0.236”).

1.8 Dimensions and Cutout

TPC-1251T

- **Weight:** 2.5 kg
- **Dimensions (W x H x D):** 311.8 x 238.0 x 57.2 mm (12.28" x 9.37" x 2.25")
- **Cutout:** 303 x 229 mm

TPC-1551T

- **Weight:** 3.9 kg
- **Dimensions (W x H x D):** 383.2 x 307.3 x 61.1 mm (15.09" x 12.10" x 2.41")
- **Cutout:** 374.5 x 298.5

TPC-1251H

- **Weight**: 2.5 kg
- **Dimensions (W x H x D)**: 311.0 x 237 x 54 mm (12.24" x 9.37" x 2.25")
- **Cutout**: 303 x 229 mm

TPC-1551H

- **Weight**: 3.9 kg
- **Dimensions (W x H x D)**: 383.0 x 307.0 x 59.0 mm (12.28" x 9.37" x 2.32")
- **Cutout**: 374.5 x 298.5 mm

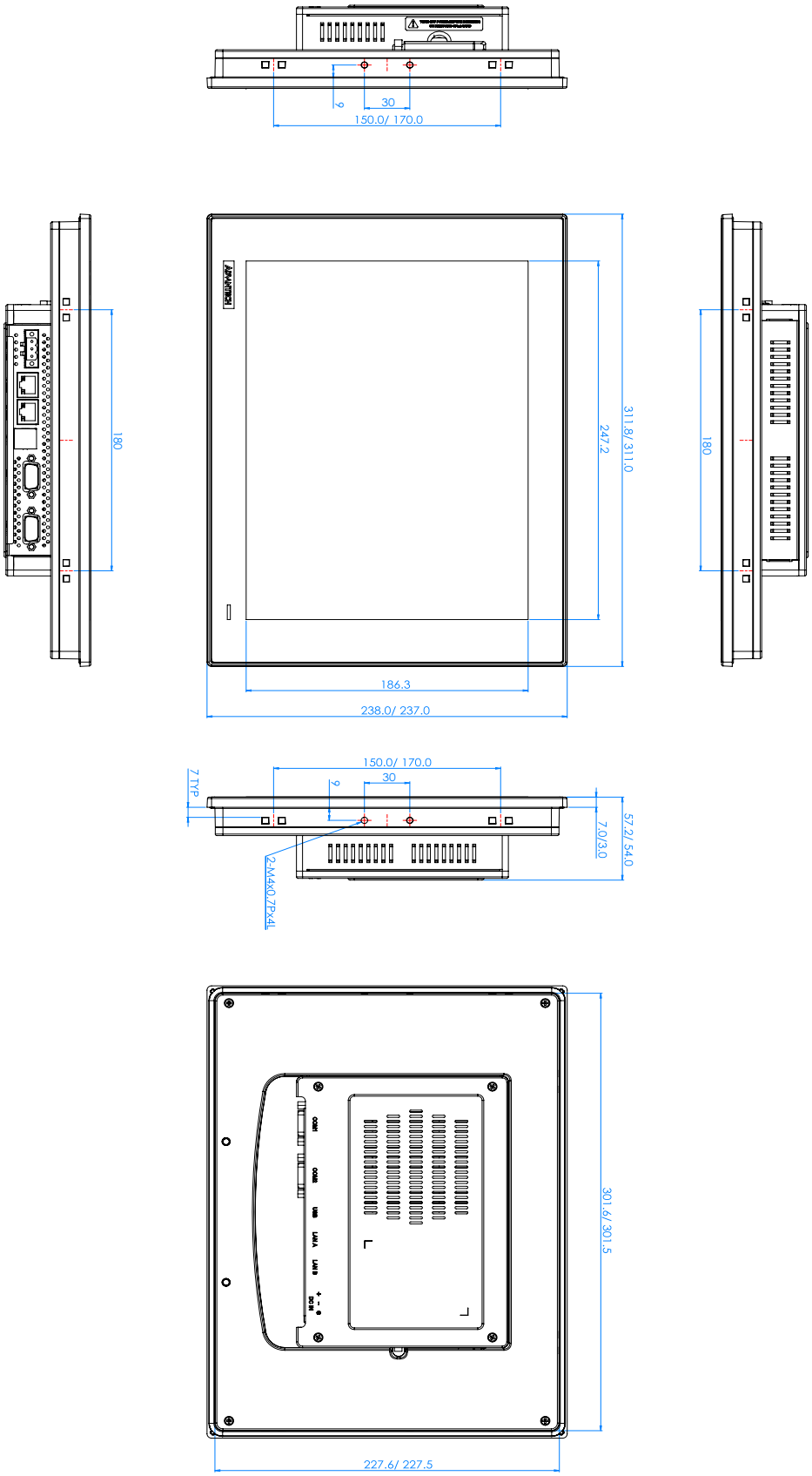


Figure 1.2 TPC-1251T/TPC-1251H Dimensions

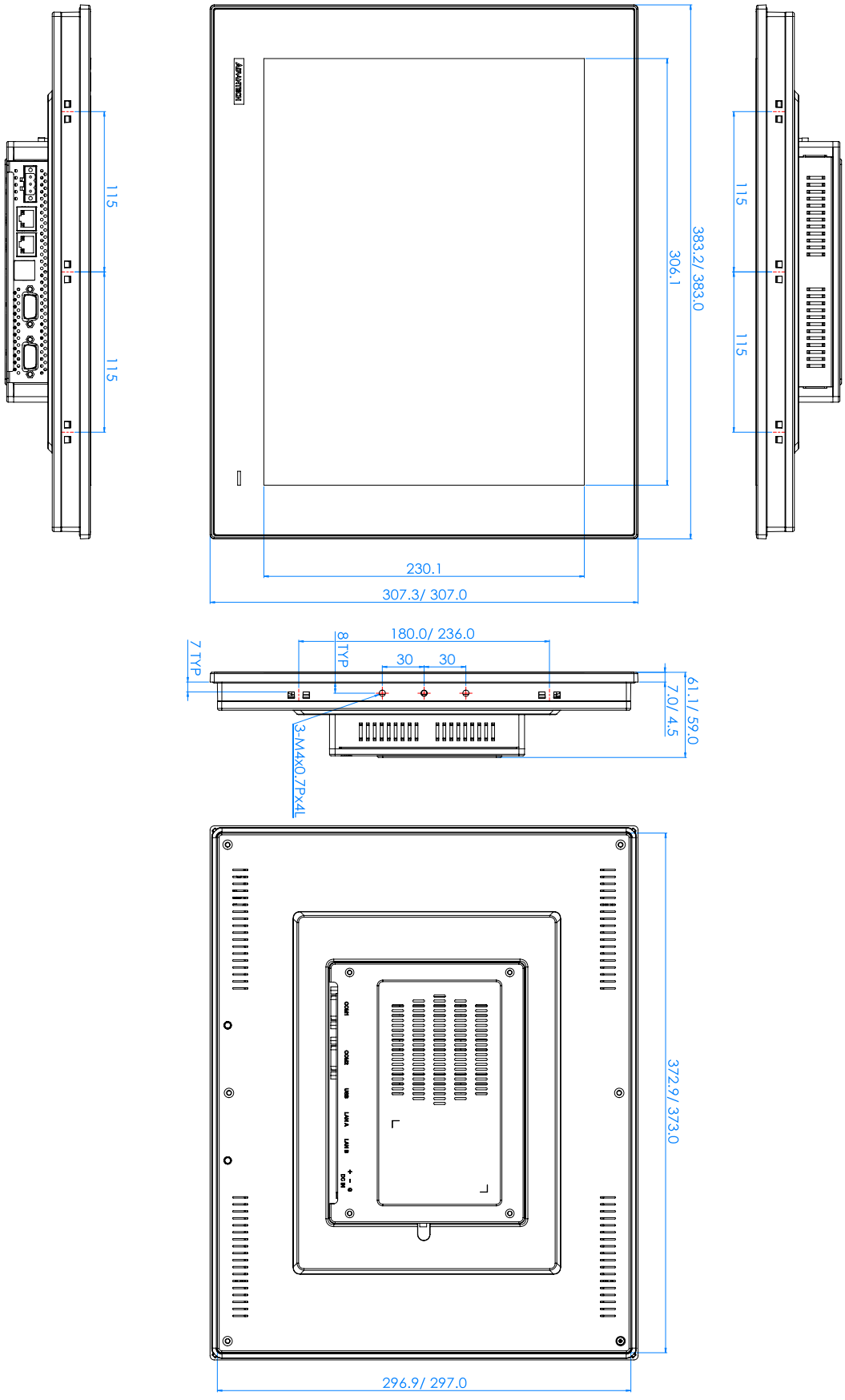


Figure 1.3 TPC-1551T/TPC-1551H Dimensions

Chapter 2

System Setup

2.1 System Setup

You can easily get TPC started by following the below steps.

1. Unpack the TPC package. Check the packing list at the beginning of this manual to make sure all items have been included.

Figure 2.1 Unpack the Package

2. Install a CFast® card containing the operating system.

Figure 2.2 Install CFast Memory Card
(Mylar in accessory box can be attached to CFast card for easy extraction)

Warning! *It is suggested to turn OFF system power as you plug in or pull out the memory card, even though the CompactFlash memory is hot swappable.*

Il est suggéré de désactiver l'alimentation du système que vous branchez ou retirez le carte mémoire, même si la mémoire CompactFlash est remplaçable à chaud.

3. Connect the power connector to the 24 V_{DC} power lines. The power lines can either be of some power adapter or in-house power source.

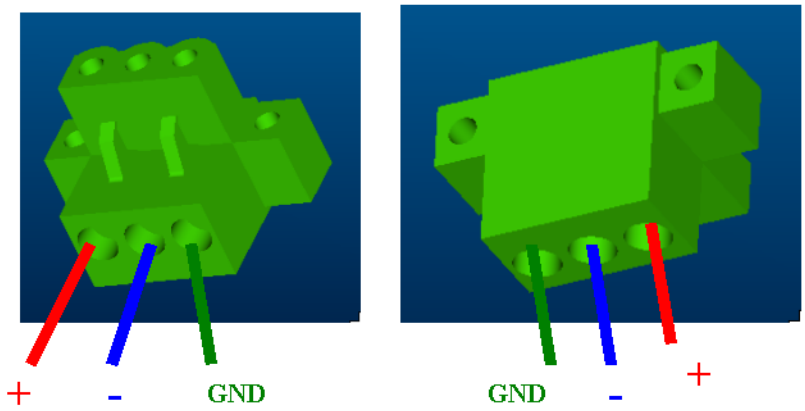


Figure 2.3 Power Connector and Power Lines

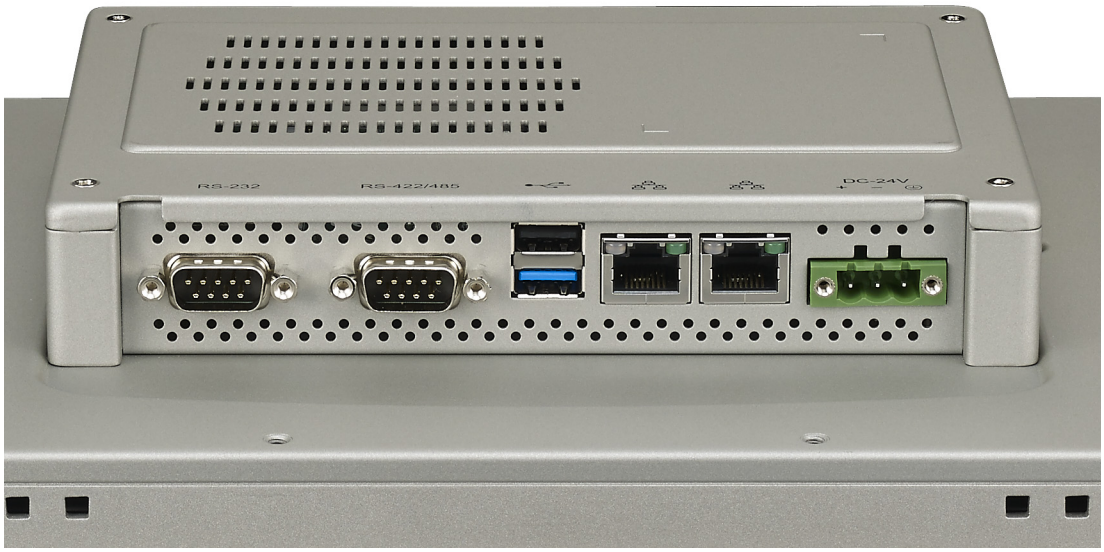


Figure 2.4 Power Receptor & Button Pin Assignment

4. Plug the power lines into the system power receptor.
5. Supply power to the system
6. Calibrate the touchscreen.

Note! *If you want to install the touchscreen driver & use the touchscreen utility, please refer the user manual which is "PenMount 6000 Installation-Guide" in the CD-ROM.*

2.1.1 Installing the Drivers

After installing your system software, you will be able to set up the Ethernet, VGA, and touchscreen functions. All drivers are stored in a CDROM disc entitled “TPC-1251T, TPC-1551T, TPC-1251H & TPC-1551H” which can be found in your accessory box.

The various drivers in the CD-ROM disc have their own text files which help users install the drivers and understand their functions. These files are a very useful supplement to the information in this manual.

Note! *The drivers and utilities used for the TPC-1251T, TPC-1551T, TPC-1251H & TPC-1551H panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utilities.*

2.2 Transport and Unpacking

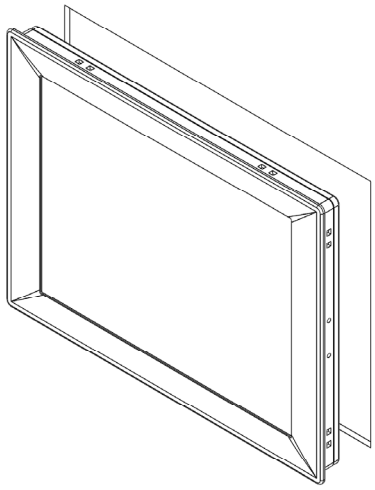
When accepting a delivery, please check the packaging for visible transport damage and check the delivery for completeness by comparing it with your order. If you notice any shipping damage or inconsistencies between the contents and your order, please inform the responsible delivery service immediately.

During transport, the TPC should be protected from excessive mechanical stress. If the TPC is transported or stored without packaging, shocks, vibrations, pressure and moisture may impact the unprotected unit. A damaged packaging indicates that ambient conditions have already had a massive impact on the device. Therefore, please use the original packaging during transportation and storage.

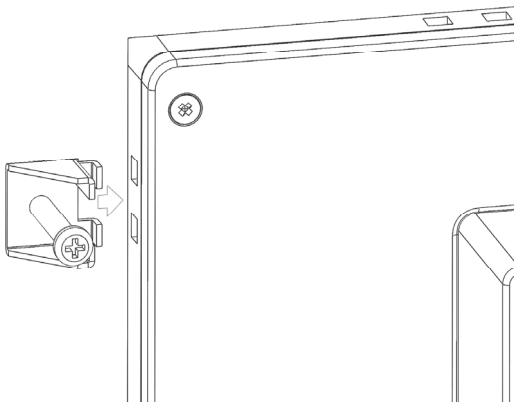
If the TPC is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not build up on or inside the HMI device. Moisture can result in short-circuits in electrical circuits and damage the device. To avoid that, please store the TPC in a dry place and bring the TPC to room temperature before starting it up. If condensation occurs, a delay time of approximately 12 hours must be allowed to make sure the TPC is completely dry before the TPC is switched on.

2.3 Panel Mounting

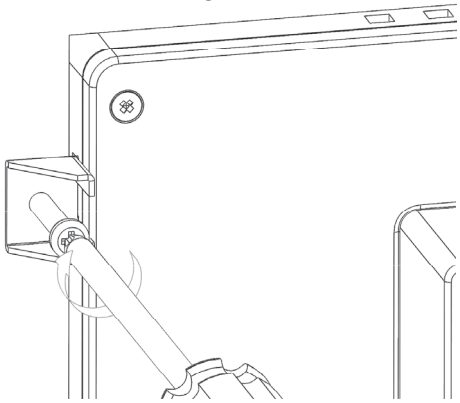
1. Position the TPC against the panel.



2. Insert the clamps into the side of the TPC.



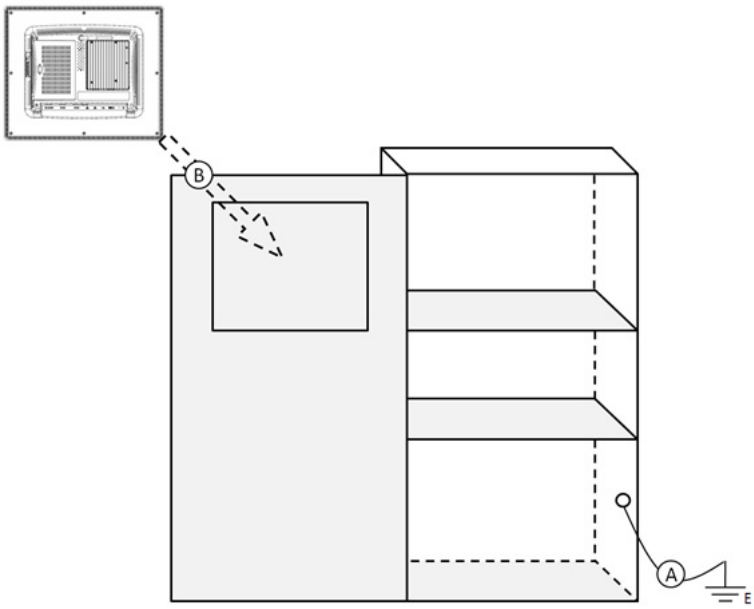
3. Secure the clamp to the panel using the included screws



2.4 Cabinet Installation and Earth Grounding setup

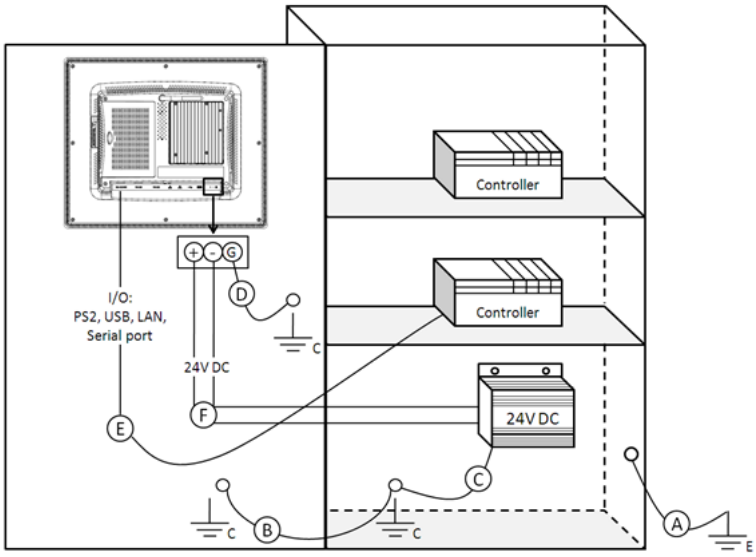
Please follow the following steps to setup TPC-xx51T/TPC-xx51H series, and please pay attention that Ground pin of TPC-xx51T/TPC-xx51H series should be connected to earth ground. Under this circumstance, TPC-xx51T/TPC-xx51H series could have the best performance such as EMI immunity, ESD immunity, Surge immunity and also system isolation. If TPC-xx51T/TPC-xx51H series is embedded in the cabinet, TPC-xx51T/TPC-xx51H's ground, cabinet's ground and earth ground should all be connected together.

1. Embed TPC-xx51T/TPC-xx51H series into the cabinet.



Step A: Connect the cabinet to earth ground.
Step B: Embed null TPC-xx51T/TPC-xx51H series into the cabinet without any I/O cable and power.

2. System wiring



Step A: Connect the cabinet to earth ground.

Step B: Ensure that all cabinet has been grounded together.

Step C: Connect the ground of the power supply to the cabinet.

Step D: Connect the ground pin of TPC-xx51T/TPC-xx51H series to the cabinet.

Step E: Connect the I/O to the controller if needed.

Step F: Connect the V+ and V- of power supply to TPC-xx51T/TPC-xx51H series.

While completing step A to F step by step, you can supply power to TPC-xx51T/TPC-xx51H series now.

Note! *Make sure all wires follow the installation guidelines or it may cause issues.*

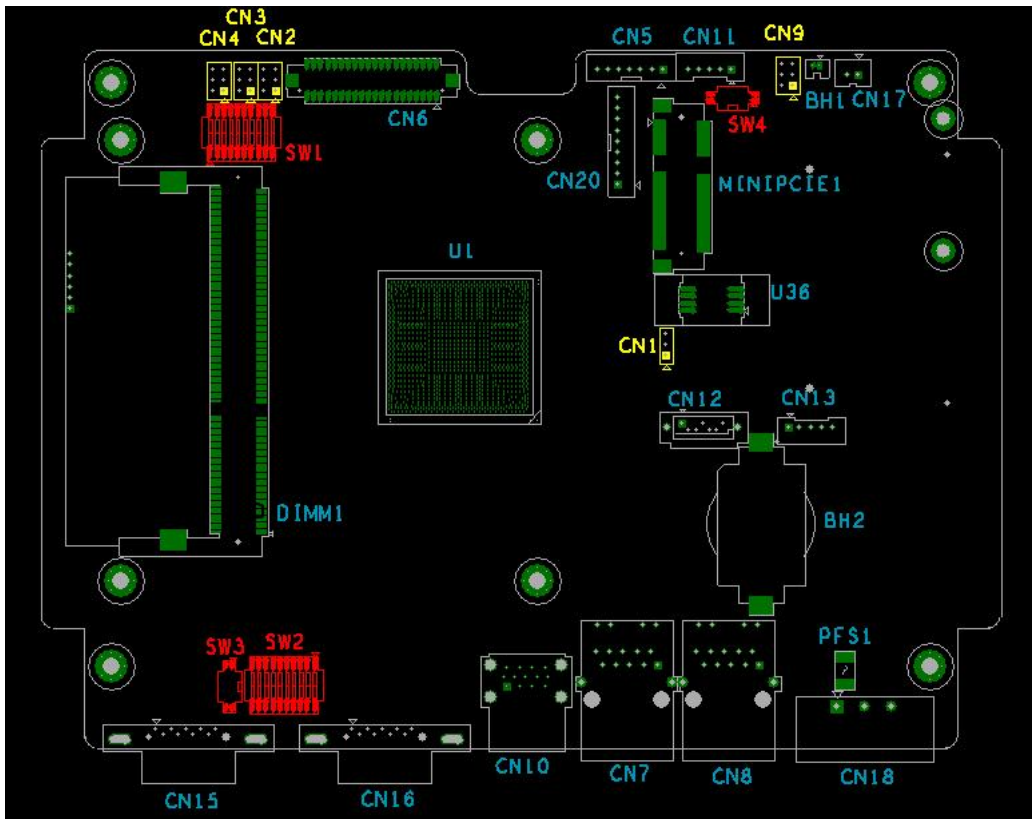
Note! *If you install a USB device or Mini PCIe card on the TPC-xx51T/ TPC-xx51H, please double check the voltage between V- and earth ground, if the voltage is not almost equal with each other, we suggest to short V- and earth ground with wiring.*

Appendix A

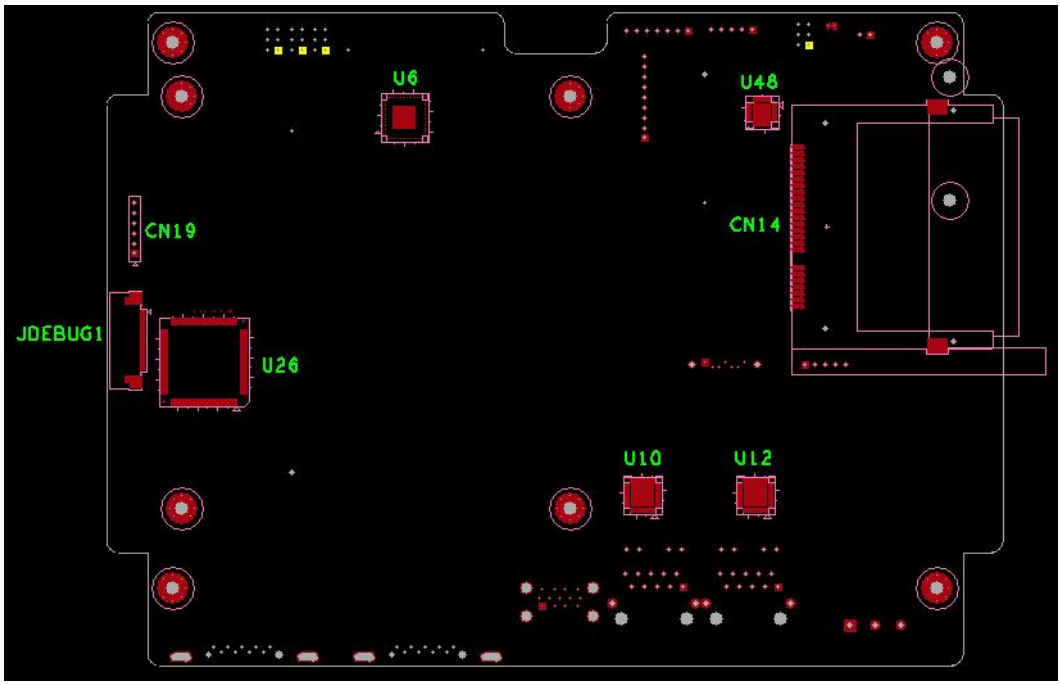
Serial Port Settings

A.1 Jumper, Dip switch and Connector location

A.1.1 Top



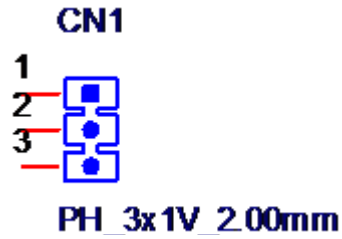
A.1.2 Bottom



A.2 Jumper setting and Description

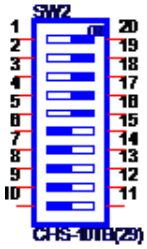
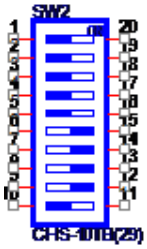
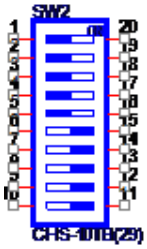
A.2.1 CMOS Clear Function (CN1)

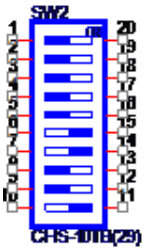
	CMOS Clear Function
Description	This jumper is used to select CMOS Clear Enable/Disable
Default	(1-2)
(2-3)	Enable (Clear CMOS)
(1-2)	Disable

	 **(1-2) Disable** **(2-3) Enable** (Clear CMOS)

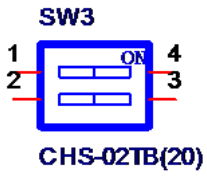
A.3 Switch Setting

COM2 RS232/422/485 mode setting (SW2)

	COM2 RS232/422/485 mode setting	
Description	This switch is used to select COM2 RS232/422/485 mode setting	
Default	RS232 mode	
RS232 Mode	Bit 1,2,3,4,5 ON Bit 6,7,8,9,10 OFF	
RS422 Master Mode	Bit 1,2,3,4,5,10 OFF Bit 6,7,8,9 ON	
RS422 Slave Mode	Bit 1,2,3,4,5 OFF Bit 6,7,8,9,10 ON	

RS485 Mode	Bit 1,2,3,4,5,8,9 OFF Bit 6,7,10 ON	

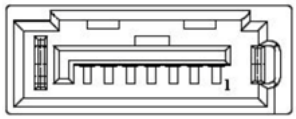
A.3.1 Termination Resistor Select (SW3)

	Termination Resistor Select	
Description	This switch is used to select Termination Resistor (120 ohm) for long distance transmission or device matching.	
Default	Bit1 off & Bit2 off (ISO_COM2_DATA+ & ISO_COM2_RX-)	
ISO_COM2_DATA+	Pin 1	Default
ISO_COM2_RX-	Pin 2	
ISO_COM2_R_RX+	Pin 3	
ISO_COM2_R_DATA-	Pin 4	
		

A.4 Connector Pin Definition

A.4.1 SATA connector (CN12)

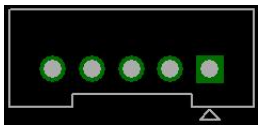
1654004659 Serial ATA 7P 1.27mm 180D(M) DIP WATM-07DBN4A3B83.12

Pin	Signal	Description
1	GND	GND
2	A+	Signal Pair A : TX+/- (Transmit)
3	A-	
4	GND	GND
5	B-	Signal Pair B : RX+/ (Receive)
6	B+	
7	GND	GND
		

A.4.2 SATA Power connector (CN13)

1655000453 WAFER BOX 2.0mm 5P 180D(M) DIP WO/Pb JIH VEI

Pin	Signal	Description
1	+V3.3SATA	SATA power output 3.3V/1A
2	+V5SATA	SATA power output 5V/1A
3	+V12SATA	SATA power output 12V/0.5A
4	GND	GND
5	GND	GND



A.4.3 Mini PCIE slot (MINIPCIE)

1654002538 MINI PCI E 52P 6.8mm 90D SMD AS0B226-S68N7H

Supports PCI1.1, PCI1.2 Power Definition

Pin	Signal	Description	Pin	Signal	Description
52	+3.3Vaux / +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3Vaux	51	Reserved	NC
50	GND		49	Reserved	NC
48	+1.5V		47	Reserved	NC
46	NC	NC	45	Reserved	NC
44	NC	NC	43	PIN43_MPCIE_PWRSEL	The pin to select the Pin 2, 52 power output for +3.3Vaux or +3.3V (PCI1.1 was Reserved and PIC1.2 was GND
42	NC	NC	41	+3.3Vaux	
40	GND		39	+3.3Vaux	
38	USB_D+	USB serial data interface compliant to the USB 2.0 specification	37	GND	
36	USB_D-		35	GND	
34	GND		33	PETp0	PCI Express differential transmit pair
32	SMB_DATA	SMBus data signal compliant to the SMBus 2.0 specification	31	PETn0	
30	SMB_CLK		29	GND	
28	+1.5V		27	GND	
26	GND		25	PERp0	PCI Express differential receive pair
24	+3.3Vaux		23	PERn0	
22	PERST#	Functional reset to the card	21	GND	
20	W_DISABLE#	Active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications. When implemented, this signal requires a pull-up resistor on the card.	19	Reserved	NC
18	GND		17	Reserved	NC
	Key	Key		Key	Key
16	NC	NC	15	GND	
14	NC	NC	13	REFCLK+	
12	NC	NC	11	REFCLK-	
10	NC	NC	9	GND	
8	NC	NC	7	CLKREQ#	Reference clock request signal
6	1.5V		5	NC	NC
4	GND		3	NC	NC
2	+3.3Vaux / +3.3V	PCI1.1 was +3.3V , PCI1.2 was +3.3Vaux	1	WAKE#	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.

* +3.3Vaux was suspend Power , power out to device +3.3V/1.1A
* +3.3V was core power
* +1.5V was core power, power out to device +1.5V/0.5A

A.4.4 CFast slot (CN14)

1653004849 CFast 24P 1.27mm 90D(M) SMD N7G24-A0B2RA-10-0HT-

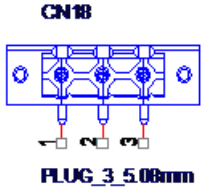
The host is connected to the CFast Card using a 7+17 pin connector

Pin	Segment	CFast Name	Description
S1	SATA	SGND	Ground for signal integrity
S2	SATA	A+	Signal Pair A : TX+/- (Transmit)
S3	SATA	A-	
S4	SATA	SGND	Ground for signal integrity
S5	SATA	B-	Signal Pair B : RX+/ (Receive)
S6	SATA	B+	
S7	SATA	SGND	Ground for signal integrity
	Key		
	Key		
PC1	PWR/CTL	CDI	NC
PC2	PWR/CTL	GND	GND
PC3	PWR/CTL	TBD	NC
PC4	PWR/CTL	TBD	NC
PC5	PWR/CTL	TBD	NC
PC6	PWR/CTL	TBD	NC
PC7	PWR/CTL	GND	GND
PC8	PWR/CTL	LED1	CF_PHYRDY LED
PC9	PWR/CTL	LED2	CF_HDDA LED
PC10	PWR/CTL	IO1	NC
PC11	PWR/CTL	IO2	NC
PC12	PWR/CTL	IO3	NC
PC13	PWR/CTL	PWR	CFast Power output to Device +3.3V / 1.2A
PC14	PWR/CTL	PWR	
PC15	PWR/CTL	PGND	Ground for Power return
PC16	PWR/CTL	PGND	
PC17	PWR/CTL	CDO	NC

A.4.5 Power in connector (CN18)

1652003104 PLUG-IN BLOCK 3P 5.08mm 90D(M) DIP ME050-50803

Pin	Signal	Description
1	Power IN V+	24VDC +-20% Power in
2	Power IN V– (GND)	
3	GND_EARTH	The GND_EARTH to connect a Screw hole for short with the chassis GND

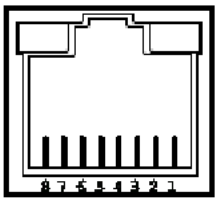


A.4.6 LAN RJ45 connector (CN7,CN8)

1652002996 PHONE JACK RJ45 14P 90D(M) DIP RTA-195AAK1A

RJ45 Pin	Signal	Description
1	MDI0+	■ In BASE-T: Media Dependent Interface[0]: ■ 1000BASE-T: In MDI configuration, MDI[0]+/- corresponds to BI_DA+/- and in MDI-X configuration MDI[0]+/- corresponds to BI_DB+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[0]+/- is used for the transmit pair and in MDIX configuration MDI[0]+/- is used for the receive pair.
2	MDI0-	
3	MDI1+	■ In BASE-T: Media Dependent Interface[1]: ■ 1000BASE-T: In MDI configuration, MDI[1]+/- corresponds to BI_DB+ and in MDI-X configuration MDI[1]+/- corresponds to BI_DA+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[1]+/- is used for the receive pair and in MDI-X configuration MDI[1]+/- is used for the transmit pair.
6	MDI1-	
4	MDI2+	■ In BASE-T: Media Dependent Interface[3:2]: ■ 1000BASE-T: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/-. ■ 100BASE-TX: Unused. ■ 10BASE-T: Unused.
5	MDI2-	
7	MDI3+	
8	MDI3-	

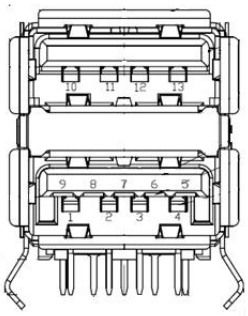
	Left LED		Right LED
10Link	**100Link**	**1000 Link**	**Active**
Off	Orange	Green	Green



A.4.7 USB connector (CN10)

1654010199 USB Conn. 2.0+3.0 13P 90D(F) DIP UEA1112C-UHS6-4

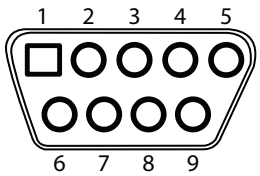
Pin	Signal	Description
1, 10	USB VBUS	USB Power output ,USB2.0 5V/0.5A and USB3.0 5V/0.9A
2, 11	USB_P-	USB2.0 date -
3, 12	USB_P+	USB2.0 date +
4,13	GND	Ground for Power return
5	SSRX-	USB3.0 RX -
6	SSRX+	USB3.0 RX +
7	GND_DRAIN	Ground for signal return
8	SSTX-	USB3.0 TX -
9	SSTX+	USB3.0 TX +



A.4.8 COM1 RS232 connector (CN15)

1654000056 D-SUB Conn. 9P 90D(M) DIP 070241MR009S200ZU

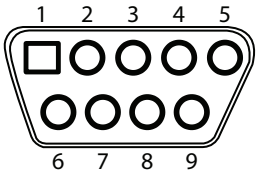
Pin	RS232
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



A.4.9 COM2 RS232/422/485 connector (CN16)

1654000056 D-SUB Conn. 9P 90D(M) DIP 070241MR009S200ZU

Pin	RS232	RS422	RS485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		



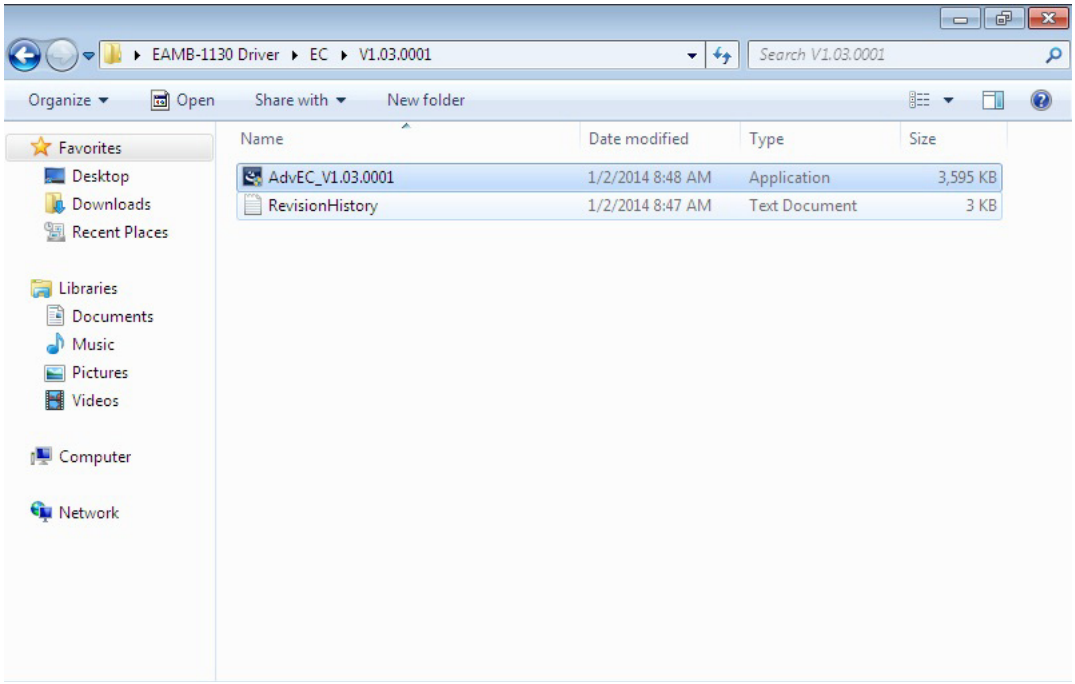
Appendix B

Driver Installation and Configuration

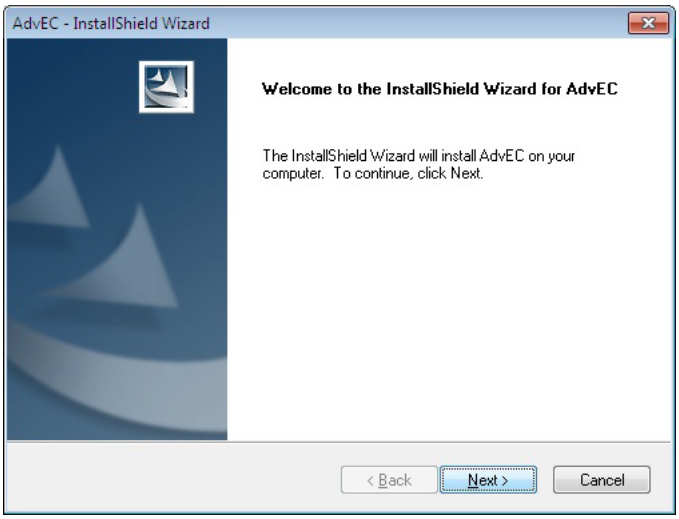
B.1 EC Driver Installation

Follow the steps below to install the EC drivers:

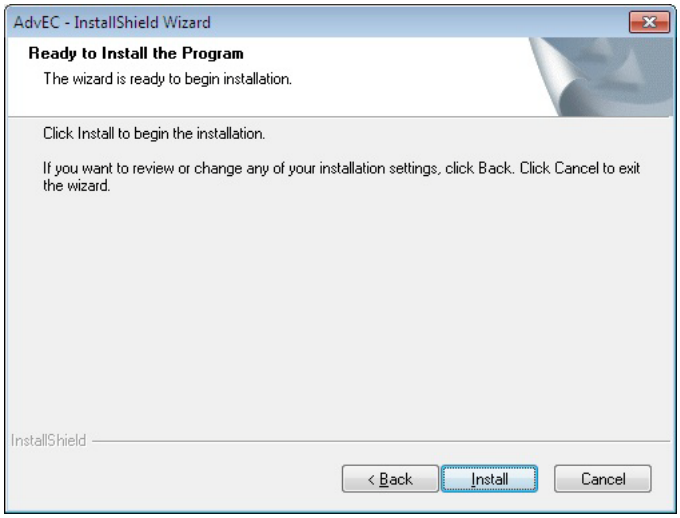
1. Launch folder \\EC\V1.03.0001
2. Install AdvEC_V1.03.0001.exe



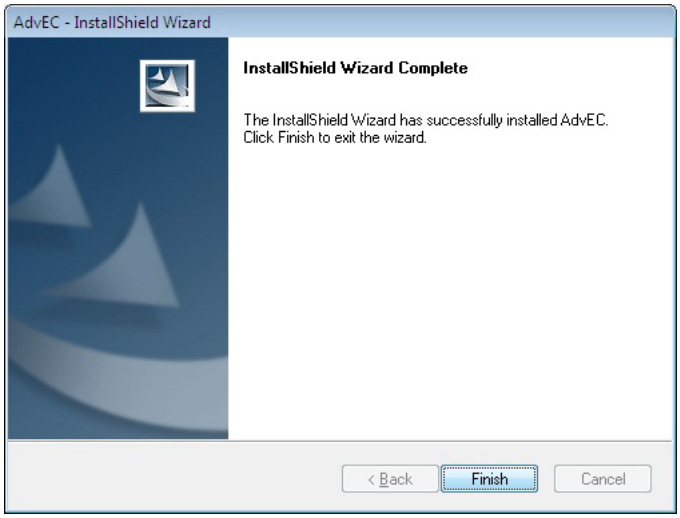
3. Click **Next**


AdvEC - InstallShield Wizard
Welcome to the InstallShield Wizard for AdvEC
The InstallShield Wizard will install AdvEC on your computer. To continue, click Next.
< Back
Next >
Cancel

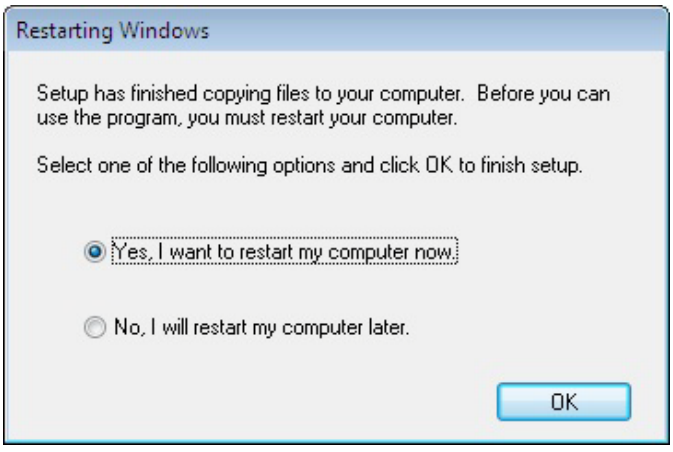
4. Click **Install**


AdvEC - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. Click **Finish**


AdvEC - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed AdvEC. Click Finish to exit the wizard.
< Back
Finish
Cancel

6. Choose **Yes**, then click **OK** to restart

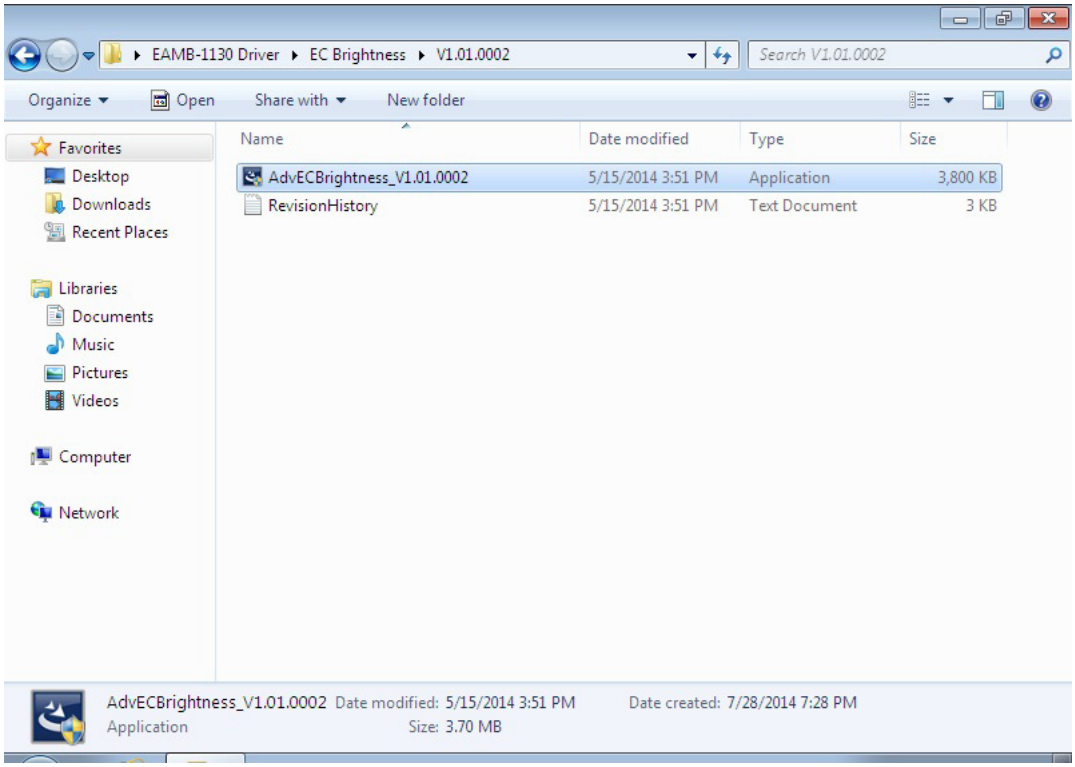

Restarting Windows
Setup has finished copying files to your computer. Before you can use the program, you must restart your computer.
Select one of the following options and click OK to finish setup.
Yes, I want to restart my computer now.
No, I will restart my computer later.
OK

B.2 EC Brightness Control Tool Installation

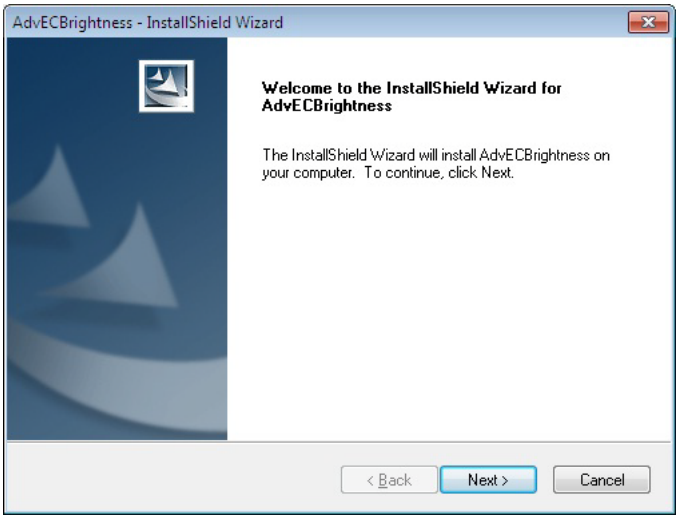
Note! *The EC driver must be installed first*

Follow the steps below to install the EC brightness control tool:

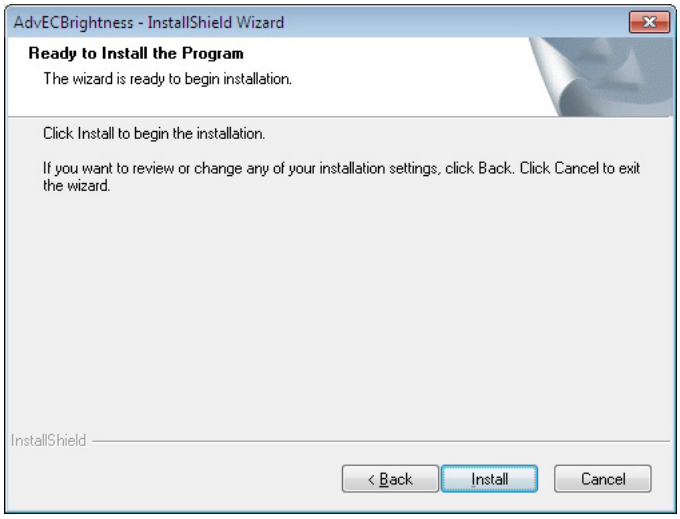
1. Launch folder \\EC Brightness\V1.01.0002
2. Install AdvECBrightness_V1.01.0002.exe



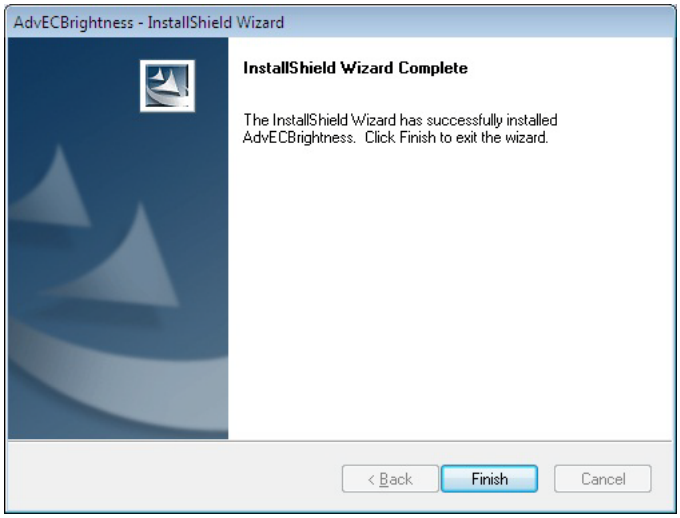
3. Click **Next**


AdvECBrightness - InstallShield Wizard
Welcome to the InstallShield Wizard for AdvECBrightness
The InstallShield Wizard will install AdvECBrightness on your computer. To continue, click Next.
< Back
Next >
Cancel

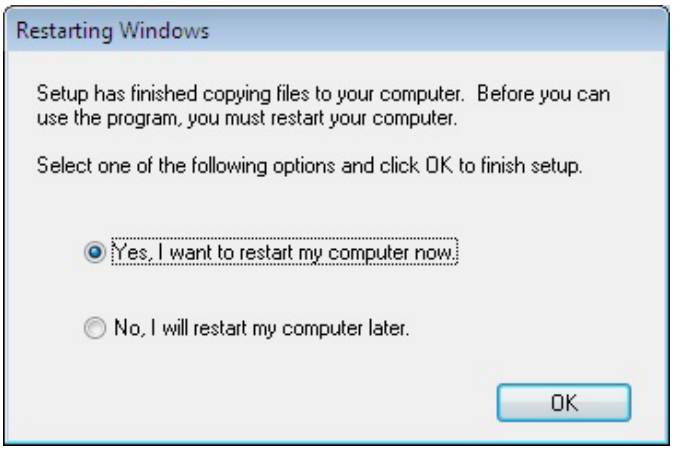
4. Click **Install**


AdvECBrightness - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. Click **Finish**


AdvECBrightness - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed AdvECBrightness. Click Finish to exit the wizard.
< Back
Finish
Cancel

6. Choose **Yes**, then click **OK** to restart

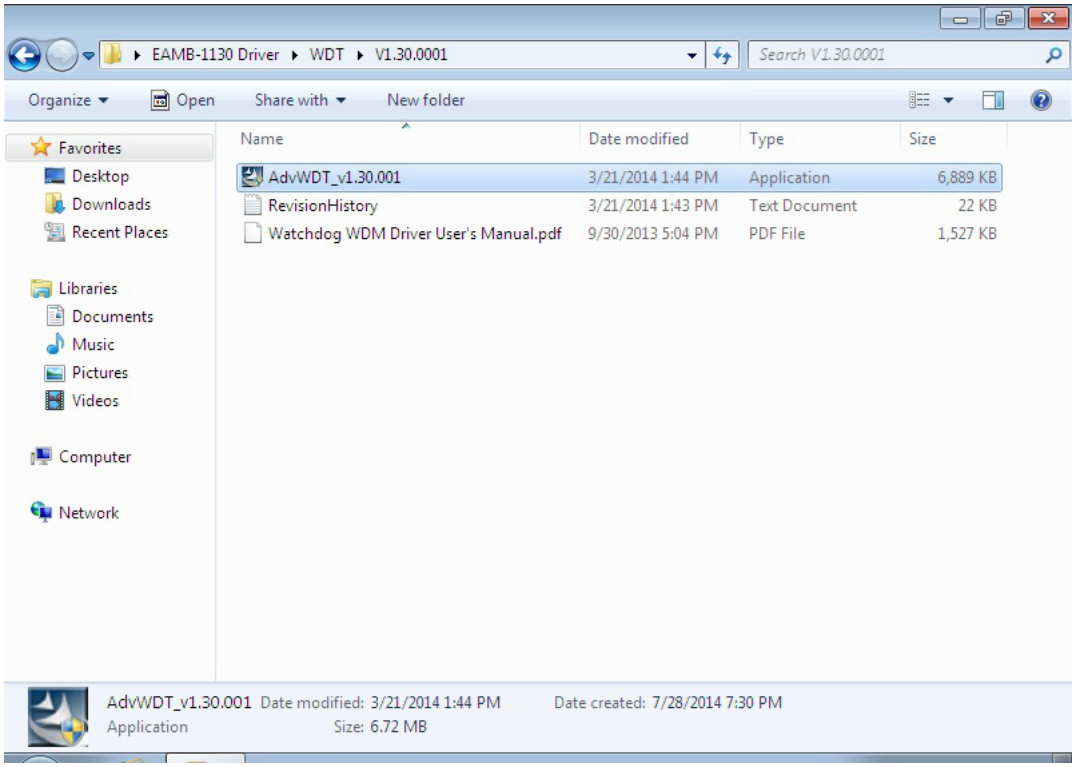

Restarting Windows
Setup has finished copying files to your computer. Before you can use the program, you must restart your computer.
Select one of the following options and click OK to finish setup.
Yes, I want to restart my computer now.
No, I will restart my computer later.
OK

B.3 EC Watchdog Timer Driver Installation

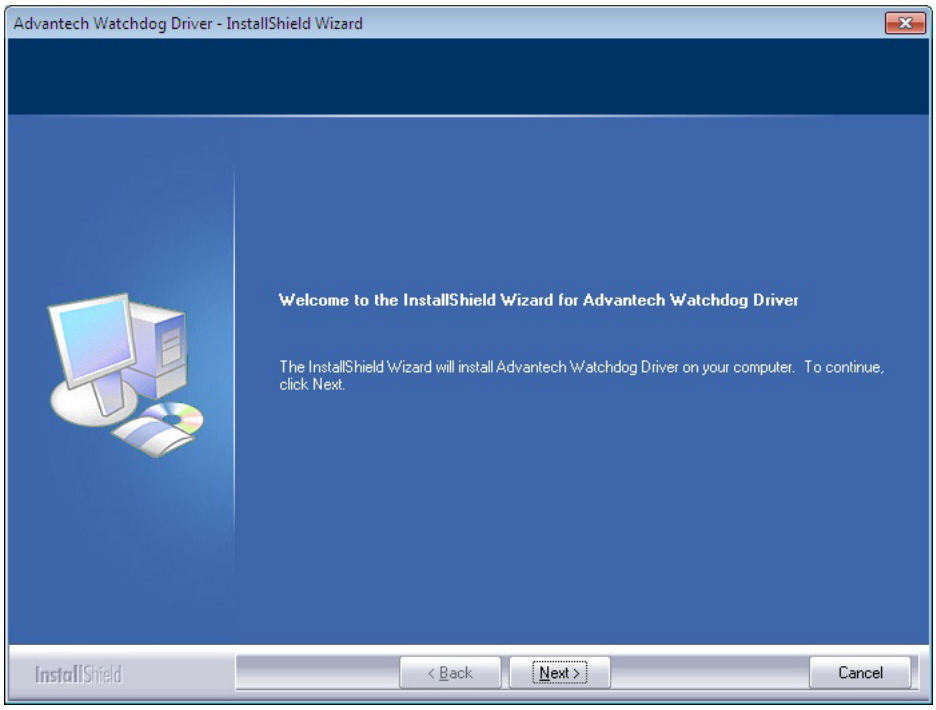
Note! *The EC driver must be installed first*

Follow the steps below to install the EC Watchdog Timer driver:

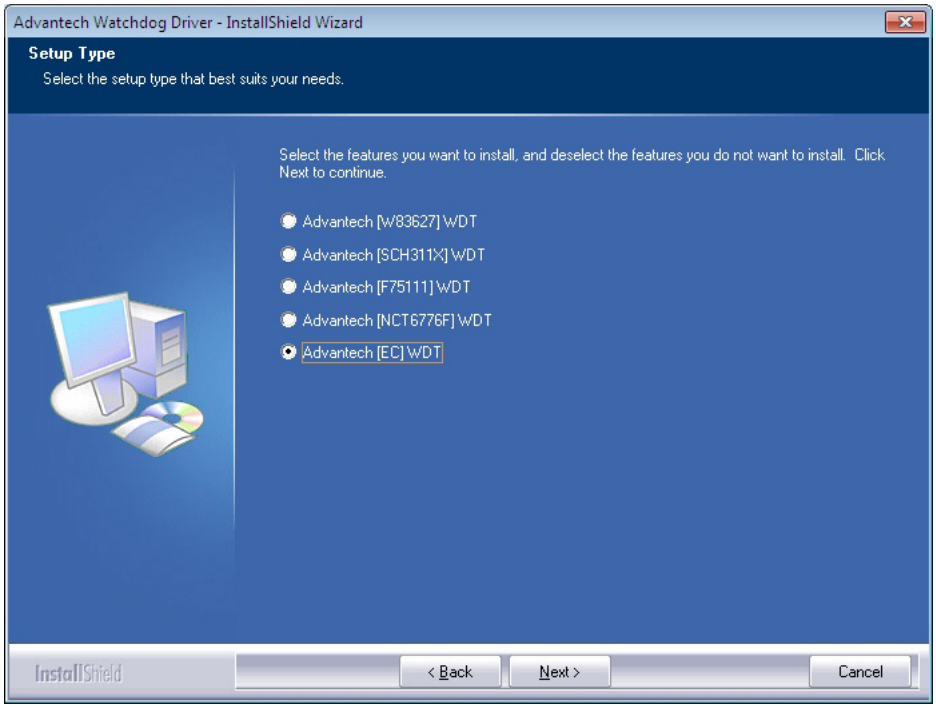
1. Launch folder \\WDT\V1.30.0001
2. Install AdvWDT_v1.30.0001.exe



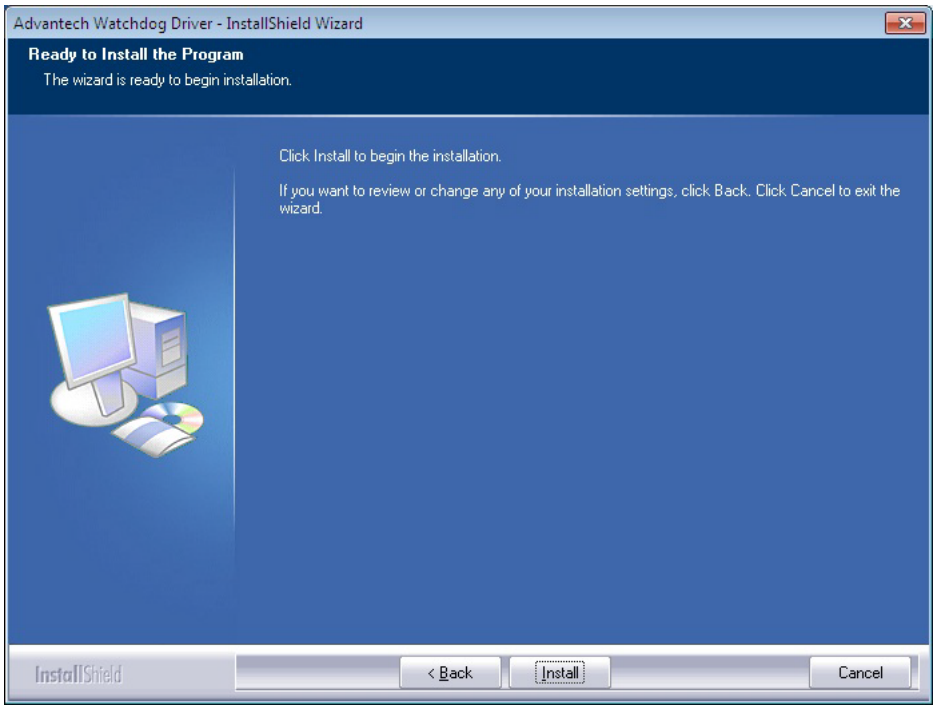
3. Click **Next**


Advantech Watchdog Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for Advantech Watchdog Driver
The InstallShield Wizard will install Advantech Watchdog Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

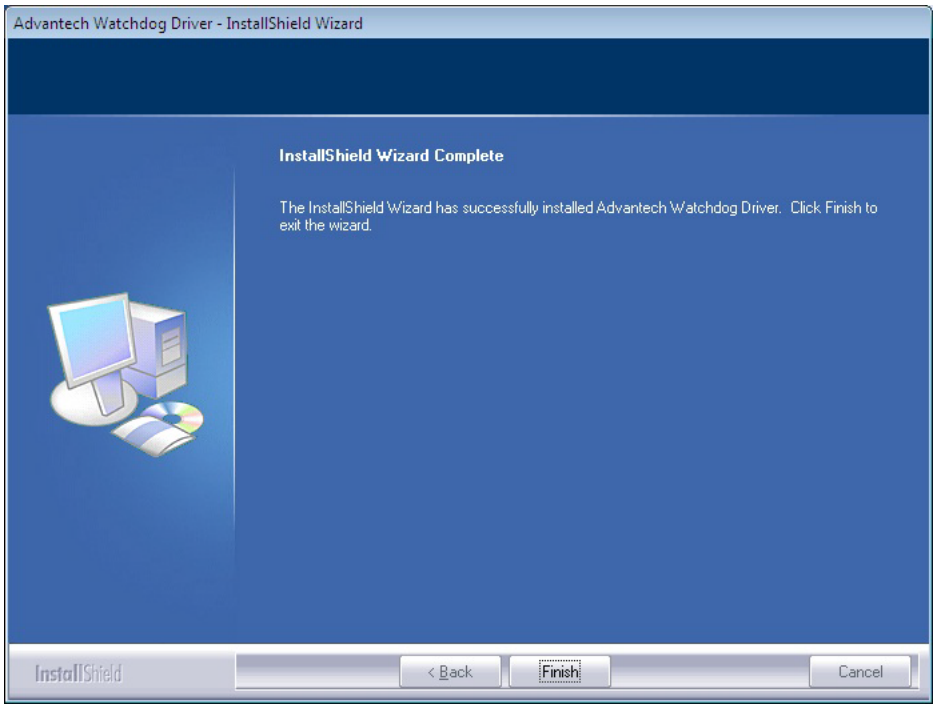
4. Choose **Advantech [EC]WDT**, then click **Next**


Advantech Watchdog Driver - InstallShield Wizard
Setup Type
Select the setup type that best suits your needs.
Select the features you want to install, and deselect the features you do not want to install. Click Next to continue.
Advantech [W83627] WDT
Advantech [SCH311X] WDT
Advantech [F75111] WDT
Advantech [NCT6776F] WDT
Advantech [EC] WDT
InstallShield
< Back
Next >
Cancel

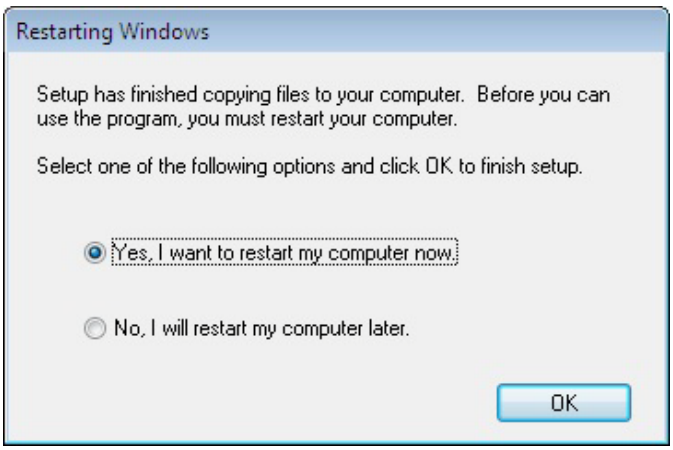
5. Click **Install**


Advantech Watchdog Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

6. Click **Finish**


Advantech Watchdog Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Advantech Watchdog Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

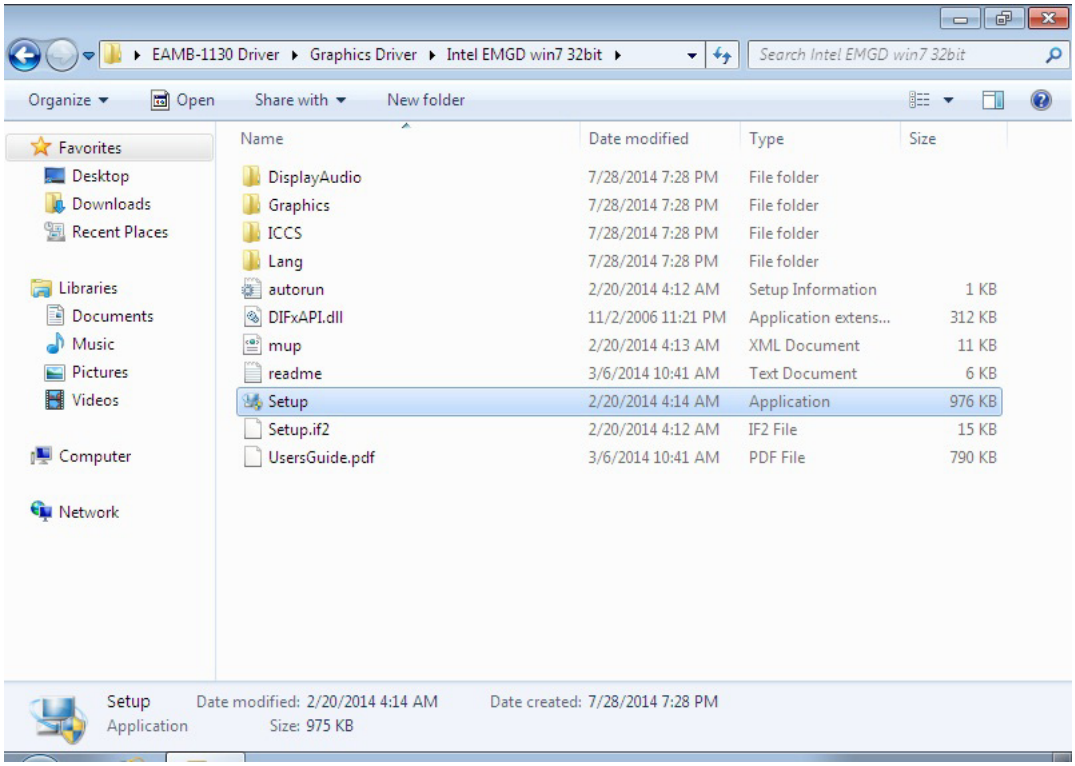
7. Choose **Yes**, then click **OK** to restart


Restarting Windows
Setup has finished copying files to your computer. Before you can use the program, you must restart your computer.
Select one of the following options and click OK to finish setup.
Yes, I want to restart my computer now.
No, I will restart my computer later.
OK

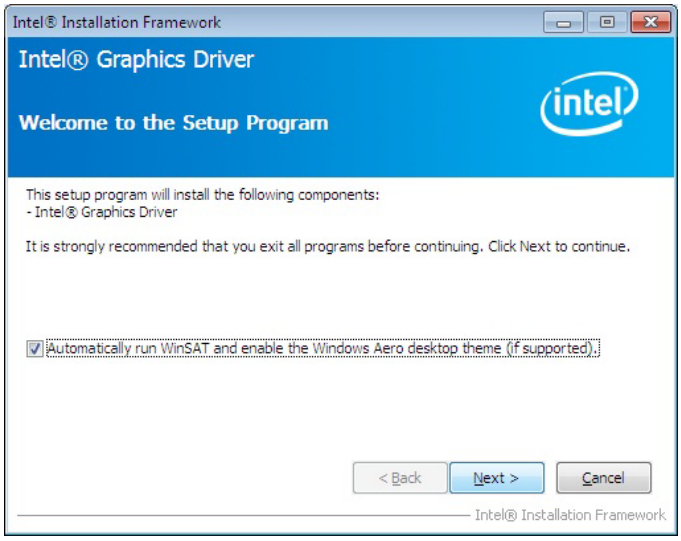
B.4 Intel Graphics Driver Installation

Follow the steps below to install the Intel Graphics driver:

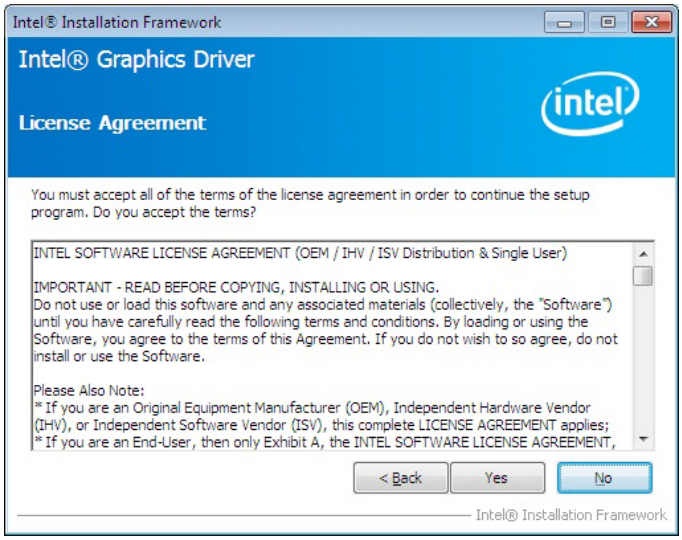
1. Launch folder \\Graphics Driver\Intel EMGD win7 32 bit\
2. Install Setp.exe



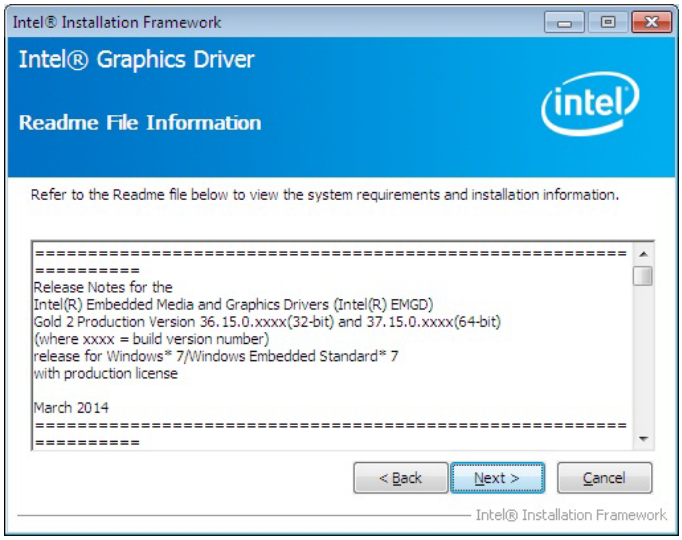
3. Click **Next**


Intel® Installation Framework
Intel® Graphics Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
- Intel® Graphics Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

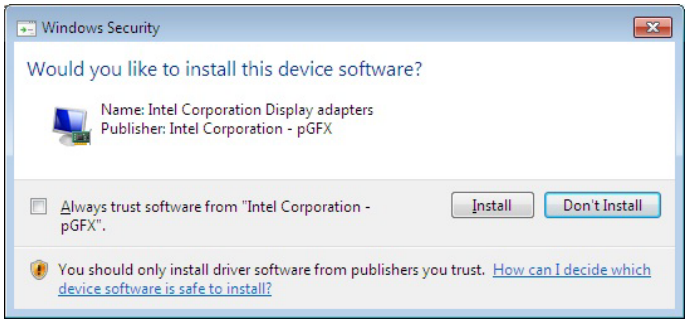
4. Click **Yes**


Intel® Installation Framework
Intel® Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

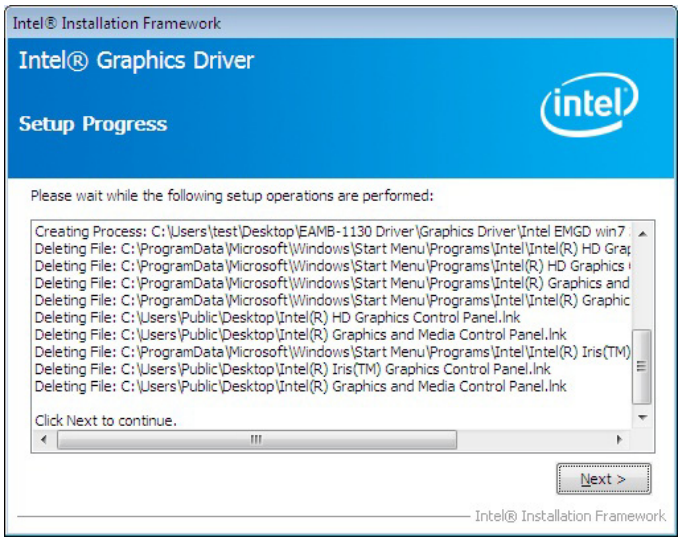
5. Click **Next**


Intel® Installation Framework
Intel® Graphics Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Release Notes for the
Intel(R) Embedded Media and Graphics Drivers (Intel(R) EMGD)
Gold 2 Production Version 36.15.0.xxxx(32-bit) and 37.15.0.xxxx(64-bit)
(where xxxx = build version number)
release for Windows* 7/Windows Embedded Standard* 7
with production license
March 2014
< Back
Next >
Cancel
Intel® Installation Framework

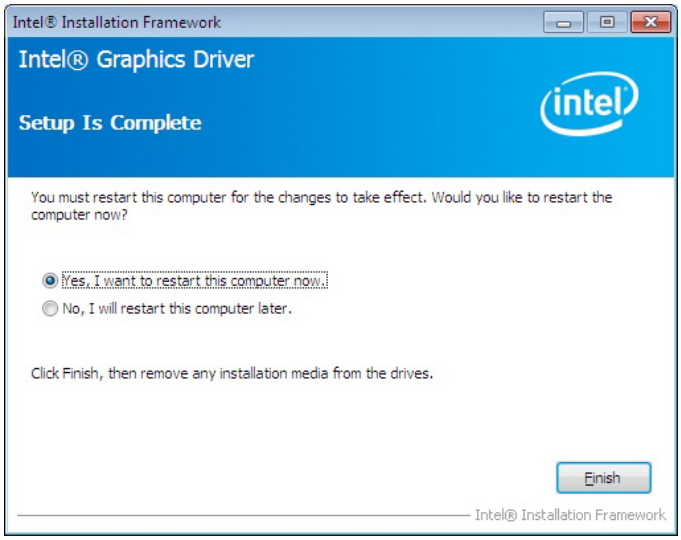
6. Click **Install**


Windows Security
Would you like to install this device software?
Name: Intel Corporation Display adapters
Publisher: Intel Corporation - pGFX
Always trust software from "Intel Corporation - pGFX".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

7. Click **Next**


Intel® Installation Framework
Intel® Graphics Driver
Setup Progress
Please wait while the following setup operations are performed:
Creating Process: C:\Users\test\Desktop\EAMB-1130 Driver\Graphics Driver\Intel EMGD win7
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Grap
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) HD Graphics
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics and
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphic
Deleting File: C:\Users\Public\Desktop\Intel(R) HD Graphics Control Panel.lnk
Deleting File: C:\Users\Public\Desktop\Intel(R) Graphics and Media Control Panel.lnk
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM)
Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk
Deleting File: C:\Users\Public\Desktop\Intel(R) Graphics and Media Control Panel.lnk
Click Next to continue.
Next >
Intel® Installation Framework

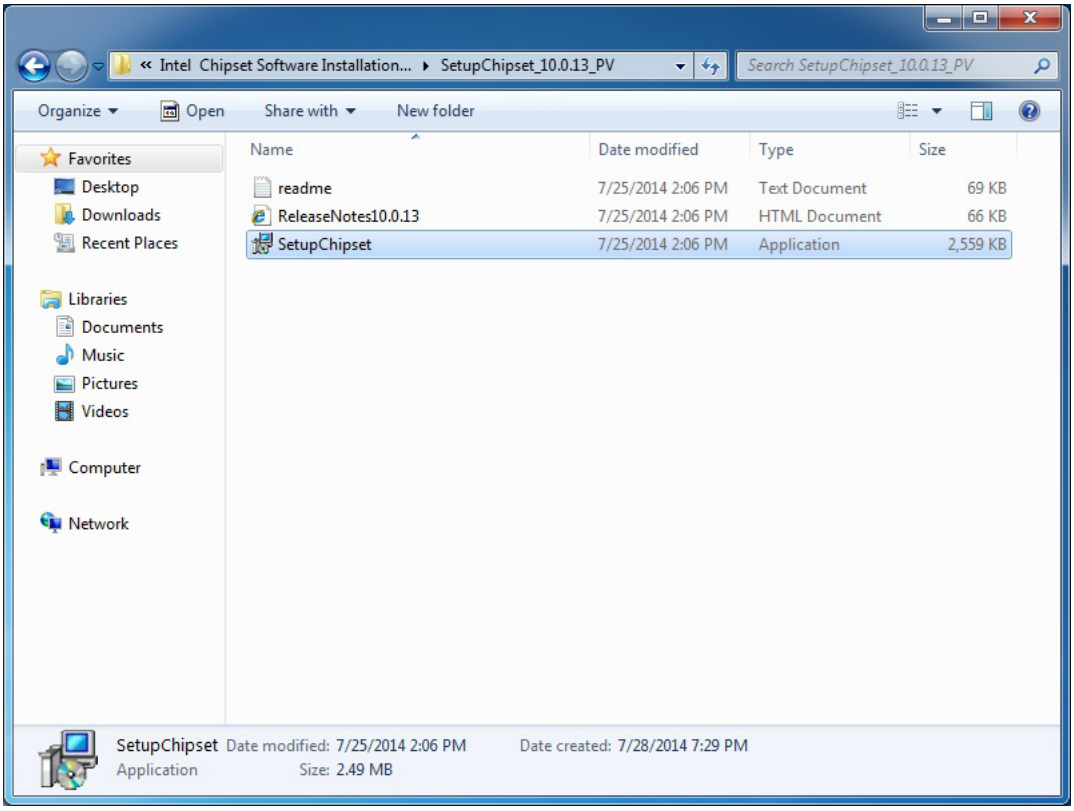
8. Choose **Yes**, then click **Finish** to restart


Intel® Installation Framework
Intel® Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

B.5 Intel Chipset Software Installation Utility Installation

Follow the steps below to install the Intel Chipset Software Installation Utility:

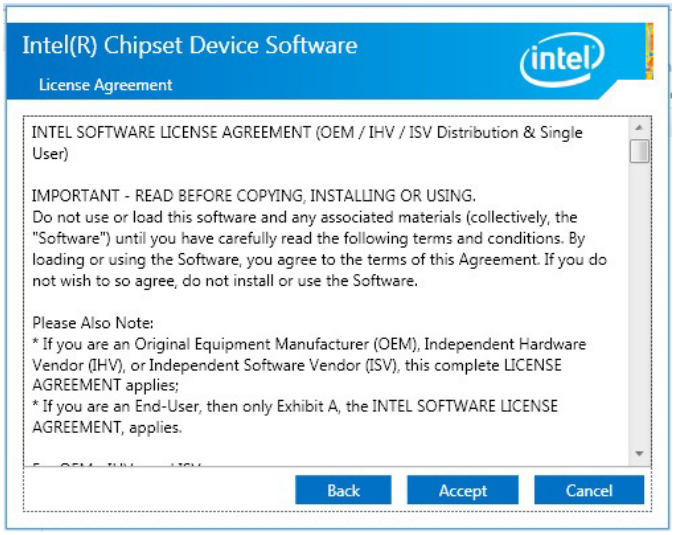
1. Launch \\Intel Chipset Software Installation Utility\SetupChipset_10.0.13_PV
2. Install SetupChipset.exe



3. Click **Next**

Intel(R) Chipset Device Software
Welcome
intel
You are about to install the following product:
Intel(R) Chipset Device Software
It is strongly recommended that you exit all programs before continuing.
Press Next to continue, or press Cancel to exit the setup program.
Next
Cancel

4. Click **Accept**


Intel(R) Chipset Device Software
License Agreement
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
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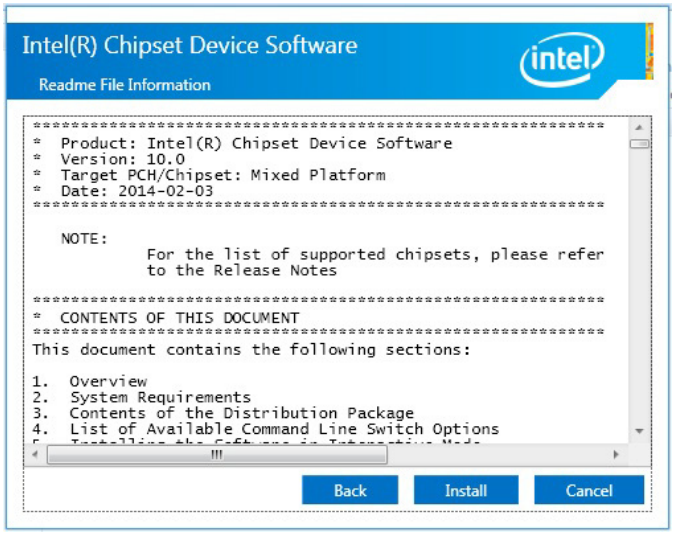
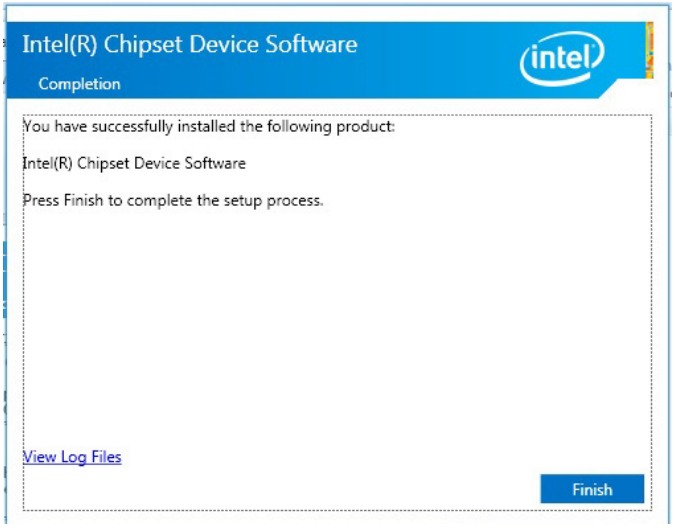
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT, applies.
Back
Accept
Cancel

5. Click **Install**


Intel(R) Chipset Device Software
Readme File Information
* Product: Intel(R) Chipset Device Software
* Version: 10.0
* Target PCH/Chipset: Mixed Platform
* Date: 2014-02-03
NOTE:
For the list of supported chipsets, please refer to the Release Notes
* CONTENTS OF THIS DOCUMENT
This document contains the following sections:
1. Overview
2. System Requirements
3. Contents of the Distribution Package
4. List of Available Command Line Switch Options
Back
Install
Cancel

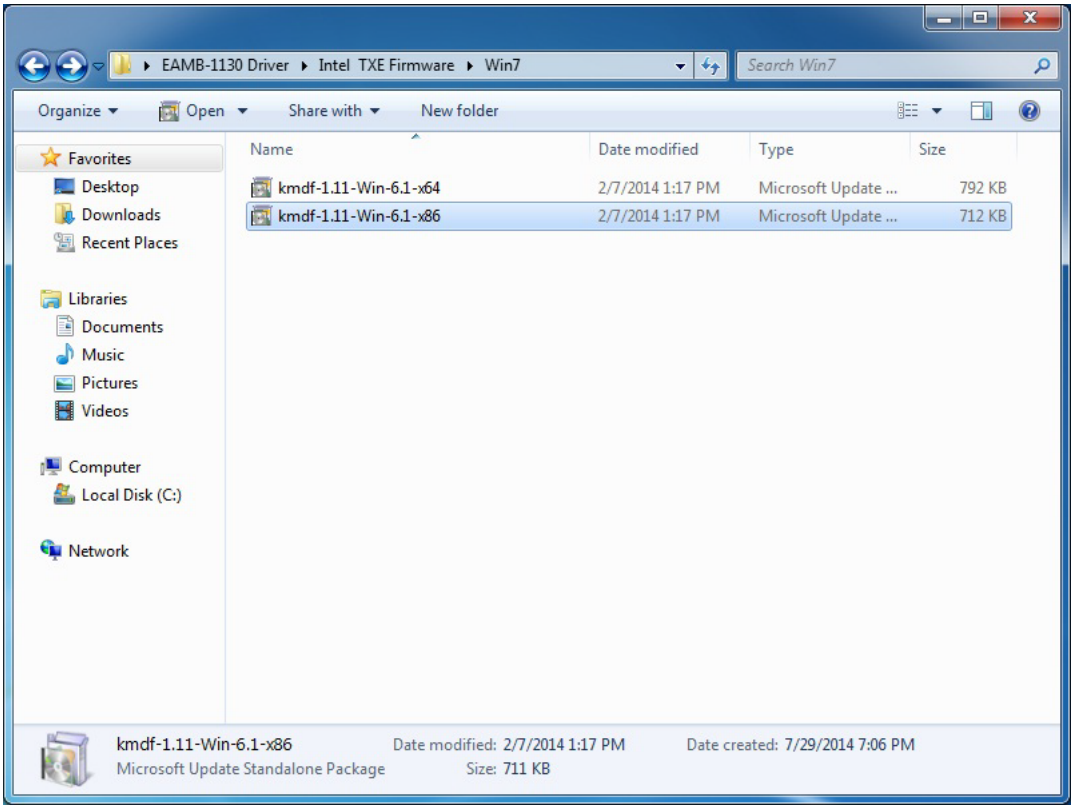
6. Click **Finish**



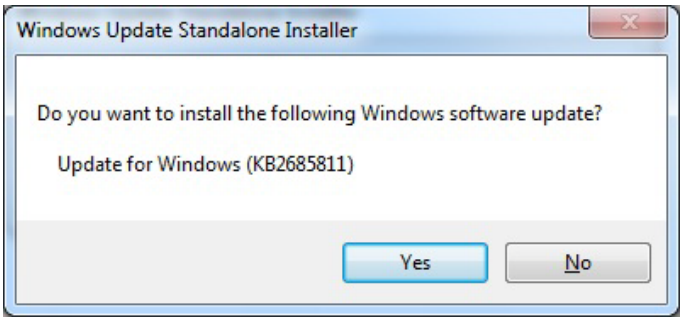
B.6 Intel® Trusted Execution Engine Driver Installation

Follow the steps below to install the Intel Trusted Execution Engine driver:

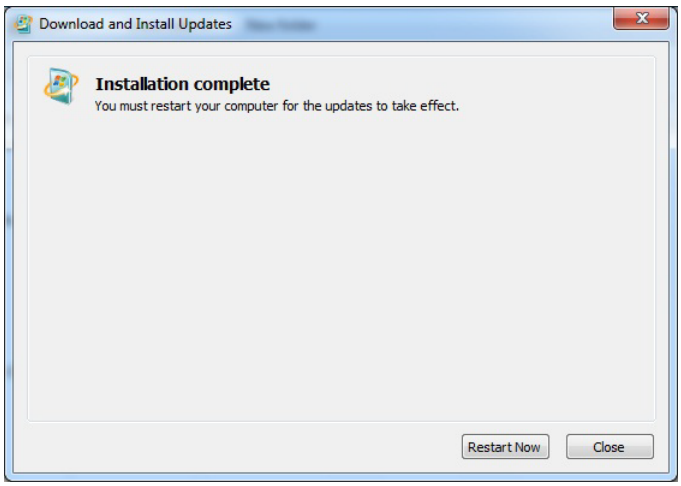
1. Launch folder \\TXE\Intel TXE Firmware\Win7
2. Install kmdf-1.11-Win-6.1-x86.msu



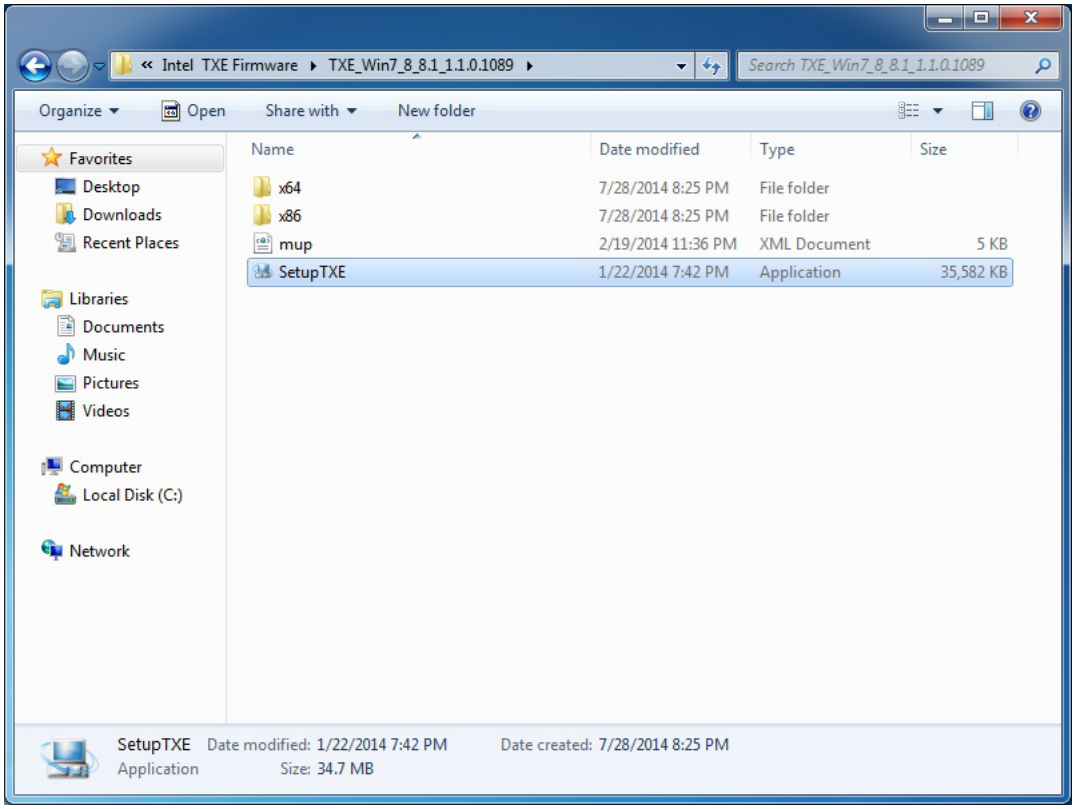
3. Click **Yes**


Windows Update Standalone Installer
Do you want to install the following Windows software update?
Update for Windows (KB2685811)
Yes
No

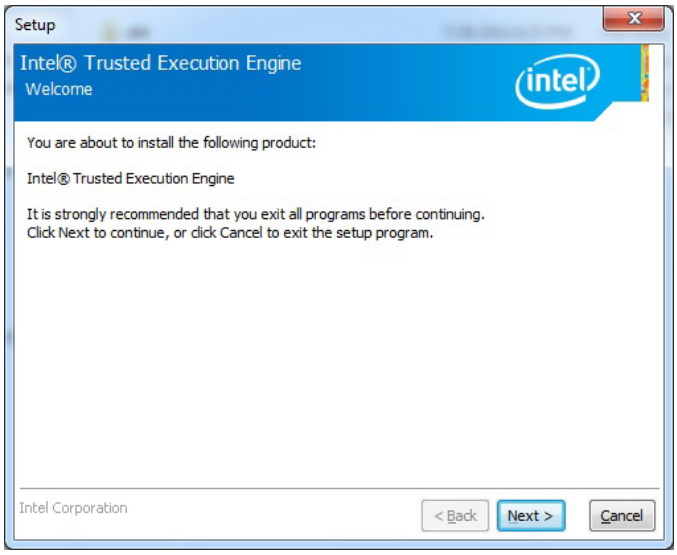
4. Click **Restart Now**, then the system will restart


Download and Install Updates
Installation complete
You must restart your computer for the updates to take effect.
Restart Now
Close

5. Launch folder \\TXE\TXE_Win7_8_8.1_1.1.0.1089
6. Install SetupTXE.exe



7. Click **Next**


Setup
Intel® Trusted Execution Engine
Welcome
You are about to install the following product:
Intel® Trusted Execution Engine
It is strongly recommended that you exit all programs before continuing.
Click Next to continue, or click Cancel to exit the setup program.
Intel Corporation
< Back
Next >
Cancel

8. Click **Next**

Setup
Intel® Trusted Execution Engine
License Agreement
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
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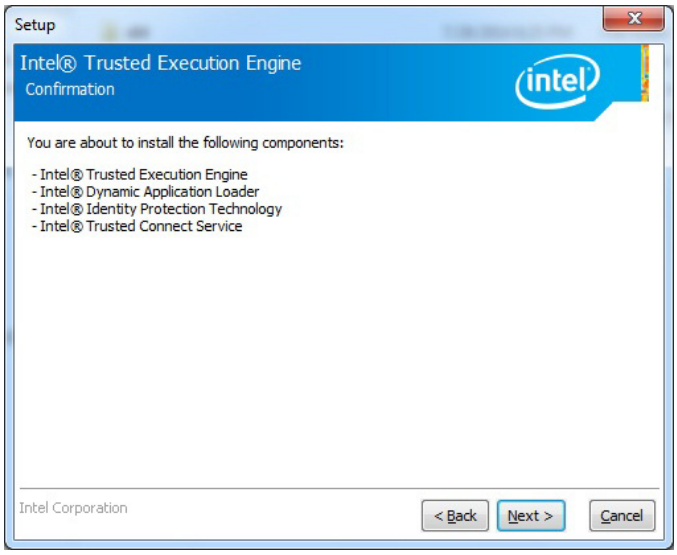
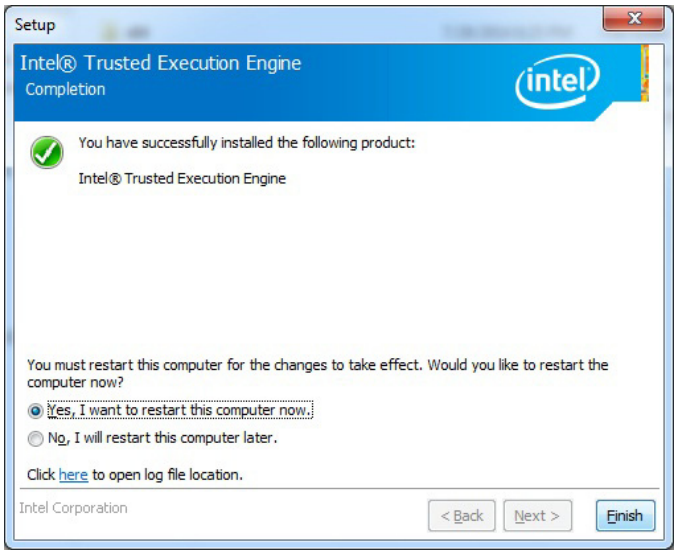
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT, applies.
For OEMs, IHVs, and ISVs:
LICENSE. This Software is licensed for use only in conjunction with Intel component products. Use of the Software in conjunction with non-Intel component products is not licensed
I accept the terms in the License Agreement.
Intel Corporation
< Back
Next >
Cancel

9. Click Next



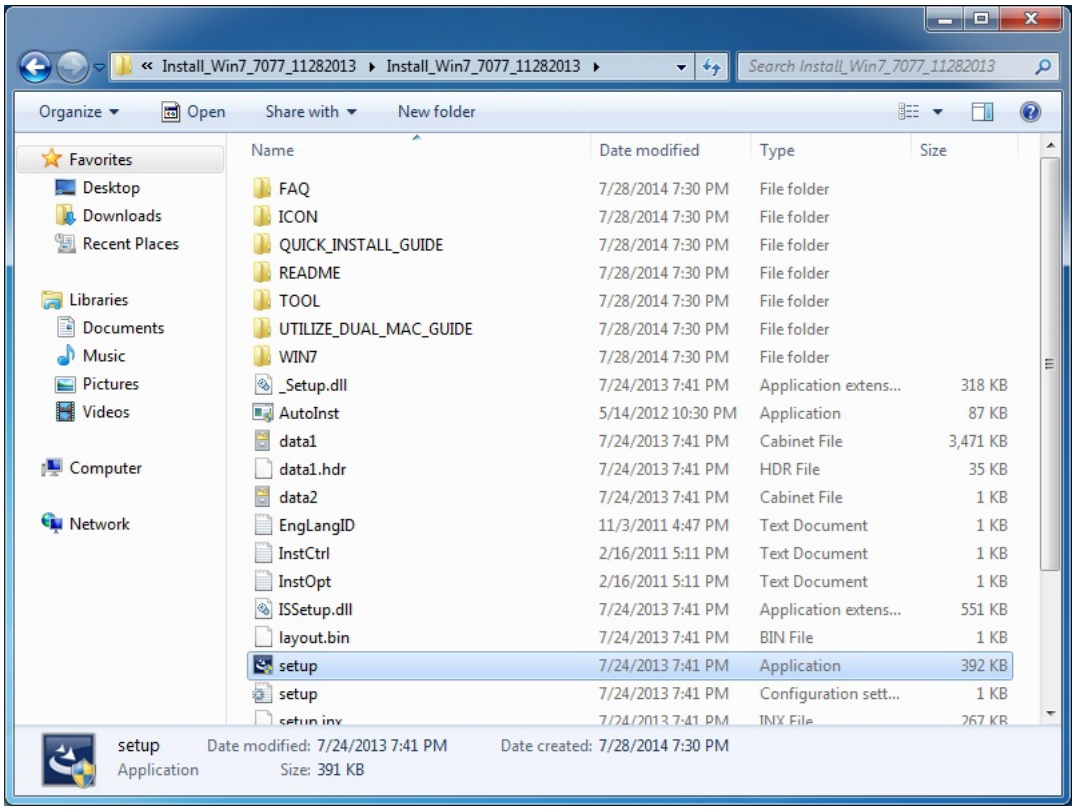
10. Choose **Yes**, then click **Finish** to restart.


Setup
Intel® Trusted Execution Engine
Completion
You have successfully installed the following product:
Intel® Trusted Execution Engine
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click here to open log file location.
Intel Corporation
< Back
Next >
Finish

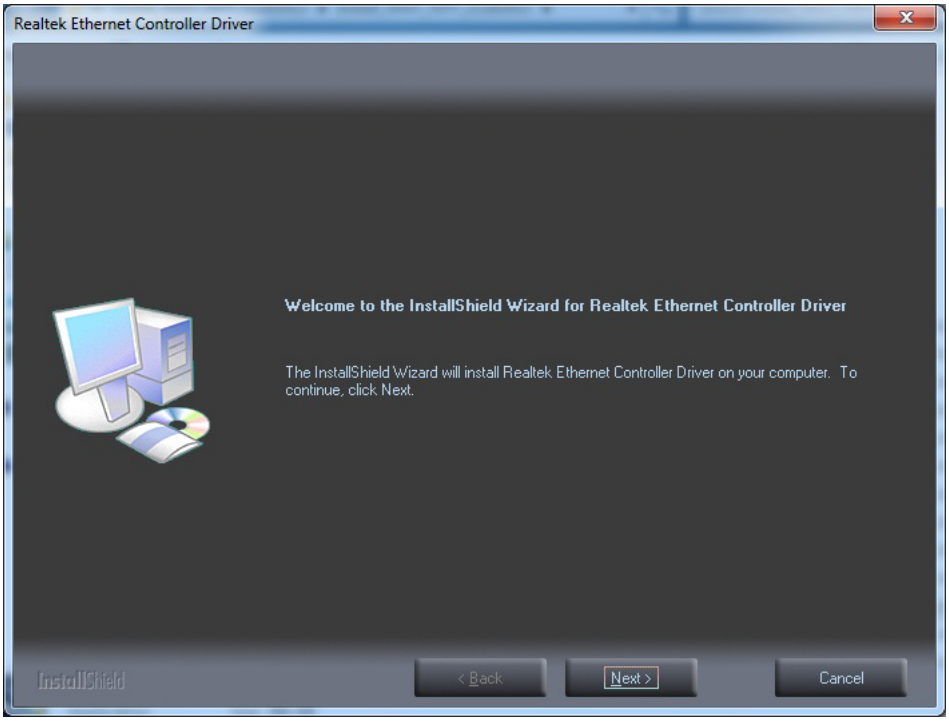
B.7 LAN Driver Installation

Follow the steps below to install the LAN driver:

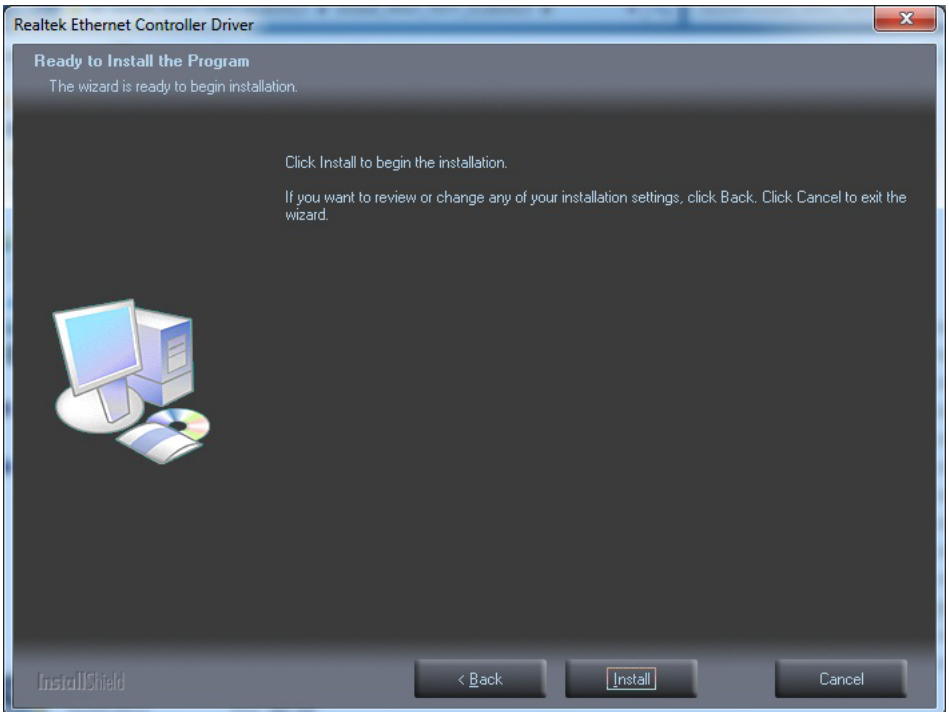
1. Launch folder \\LAN\Win7 \Install_Win7_7077_11282013
2. Install setup.exe


Install_Win7_7077_11282013 ▸ Install_Win7_7077_11282013 ▸
Search Install_Win7_7077_11282013
Organize
Open
Share with
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Network
Name
Date modified
Type
Size
FAQ 7/28/2014 7:30 PM File folder
ICON 7/28/2014 7:30 PM File folder
QUICK_INSTALL_GUIDE 7/28/2014 7:30 PM File folder
README 7/28/2014 7:30 PM File folder
TOOL 7/28/2014 7:30 PM File folder
UTILIZE_DUAL_MAC_GUIDE 7/28/2014 7:30 PM File folder
WIN7 7/28/2014 7:30 PM File folder
_Setup.dll 7/24/2013 7:41 PM Application extens... 318 KB
AutoInst 5/14/2012 10:30 PM Application 87 KB
data1 7/24/2013 7:41 PM Cabinet File 3,471 KB
data1.hdr 7/24/2013 7:41 PM HDR File 35 KB
data2 7/24/2013 7:41 PM Cabinet File 1 KB
EngLangID 11/3/2011 4:47 PM Text Document 1 KB
InstCtrl 2/16/2011 5:11 PM Text Document 1 KB
InstOpt 2/16/2011 5:11 PM Text Document 1 KB
ISSetup.dll 7/24/2013 7:41 PM Application extens... 551 KB
layout.bin 7/24/2013 7:41 PM BIN File 1 KB
setup 7/24/2013 7:41 PM Application 392 KB
setup 7/24/2013 7:41 PM Configuration sett... 1 KB
setup.ini 7/24/2013 7:41 PM INI File 267 KB
setup Date modified: 7/24/2013 7:41 PM Date created: 7/28/2014 7:30 PM
Application Size: 391 KB

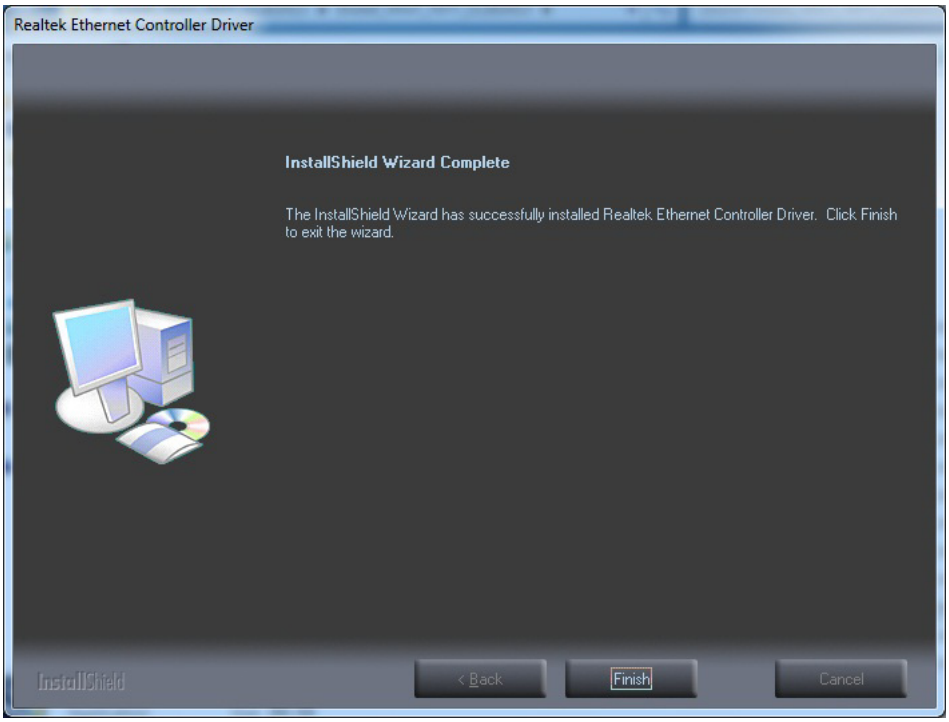
3. Click **Next**


Realtek Ethernet Controller Driver
Welcome to the InstallShield Wizard for Realtek Ethernet Controller Driver
The InstallShield Wizard will install Realtek Ethernet Controller Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

4. Click **Install**


Realtek Ethernet Controller Driver
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

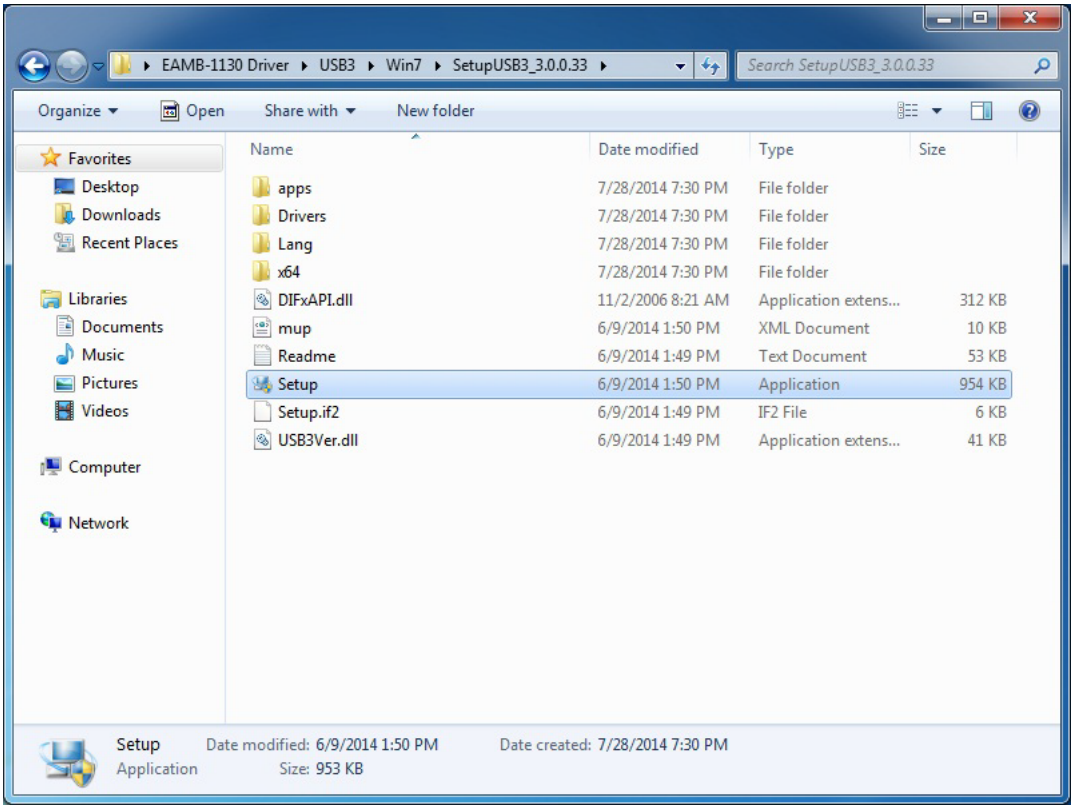
5. Click **Finish**


Realtek Ethernet Controller Driver
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek Ethernet Controller Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

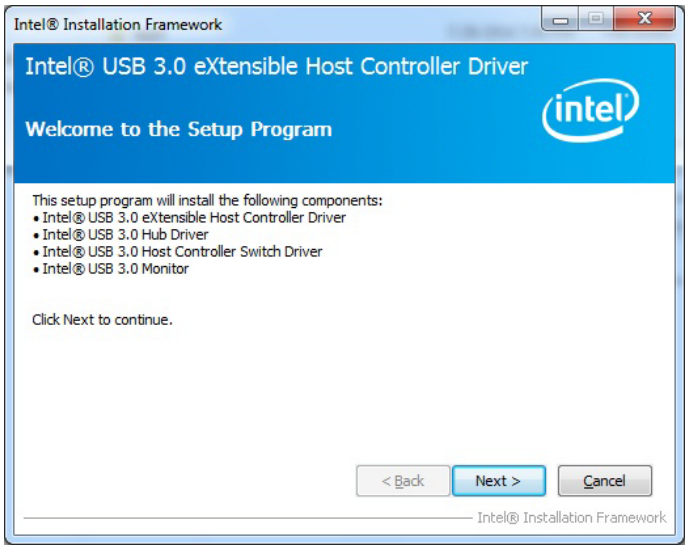
B.8 Windows 7 USB 3.0 Driver Installation

Follow the steps below to install the Windows 7 USB 3.0 driver:

1. Launch folder \\USB3\Win7\SetupUSB3_3.0.0.33
2. Install Setup.exe

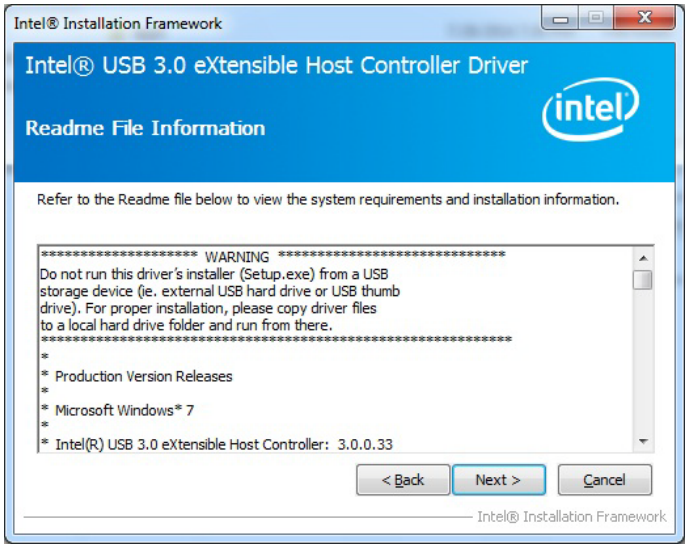


3. Click **Next**

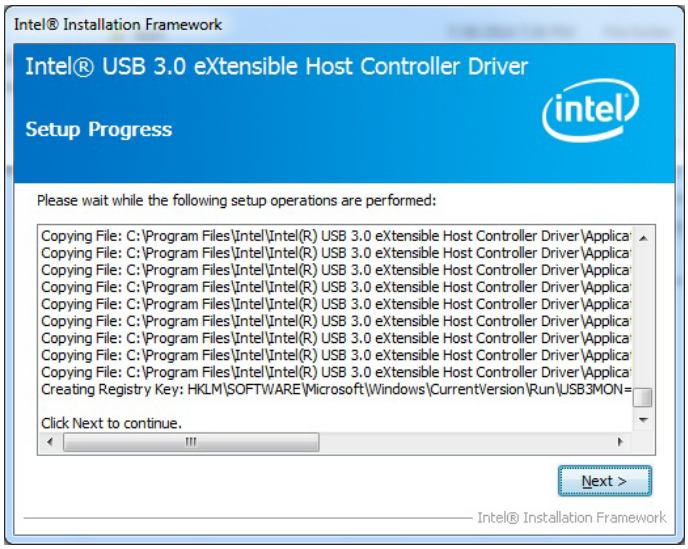

Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
• Intel® USB 3.0 eXtensible Host Controller Driver
• Intel® USB 3.0 Hub Driver
• Intel® USB 3.0 Host Controller Switch Driver
• Intel® USB 3.0 Monitor
Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

4. Click **Yes**

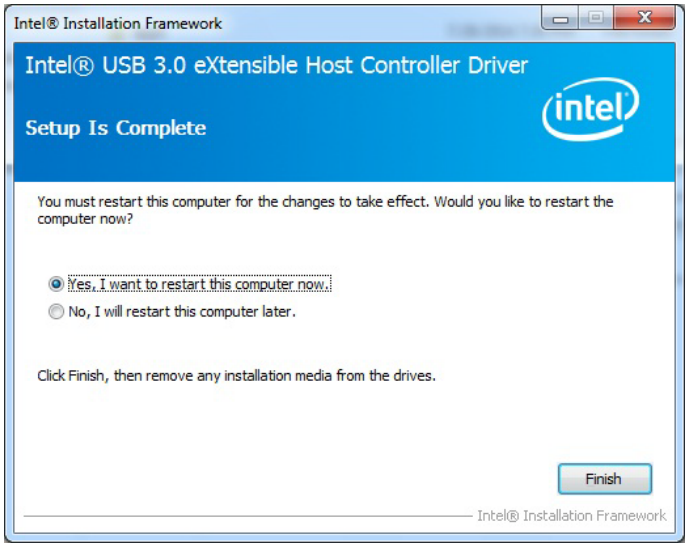
5. Click **Next**



6. Click **Next**



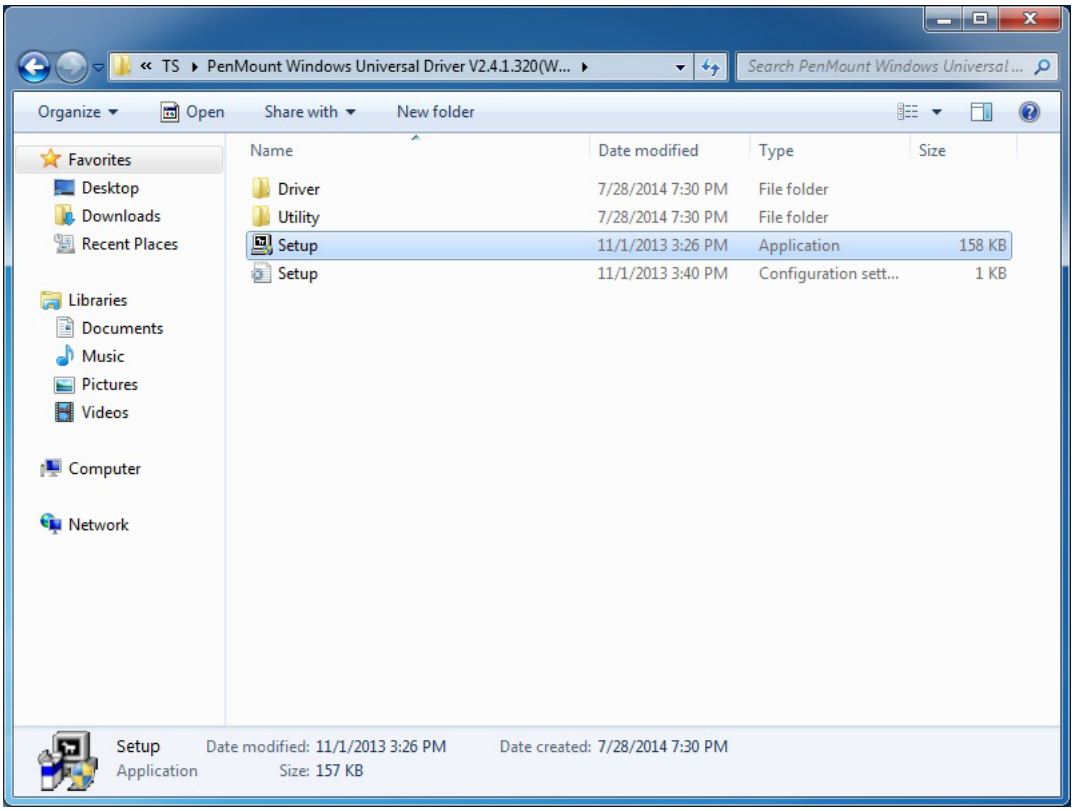
7. Choose **Yes**, then click **Finish** to restart


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

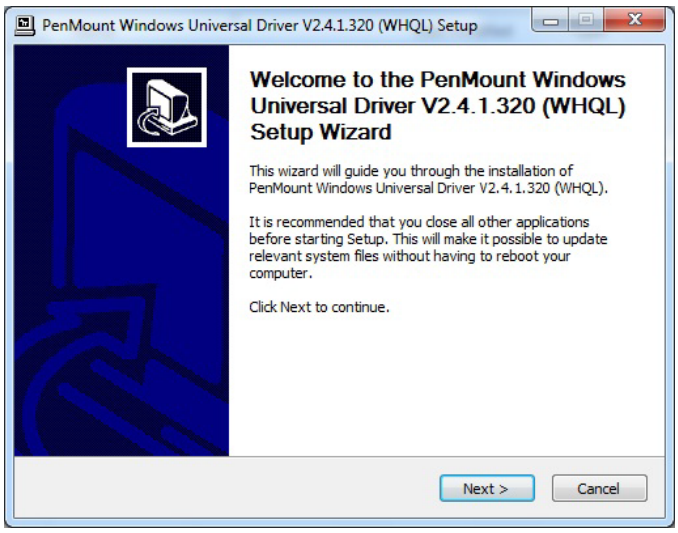
B.9 Touchscreen Driver Installation

Follow the steps below to install the touchscreen driver:

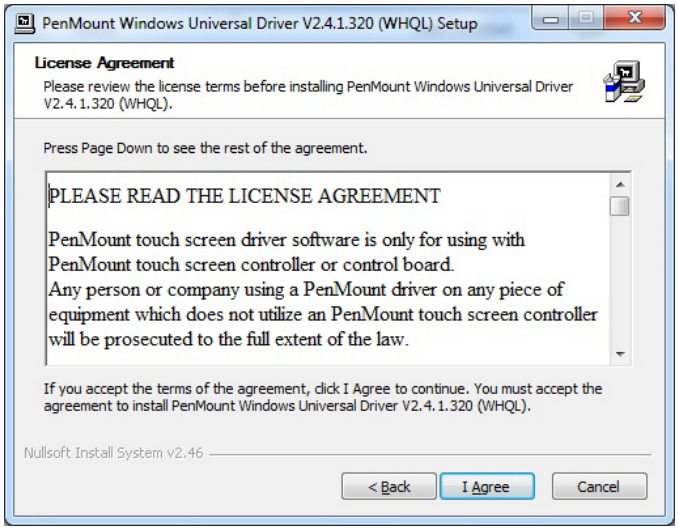
1. Launch folder \\TS\PenMount Windows Universal Driver V2.4.1.320(WHQL)
2. Install Setup.exe



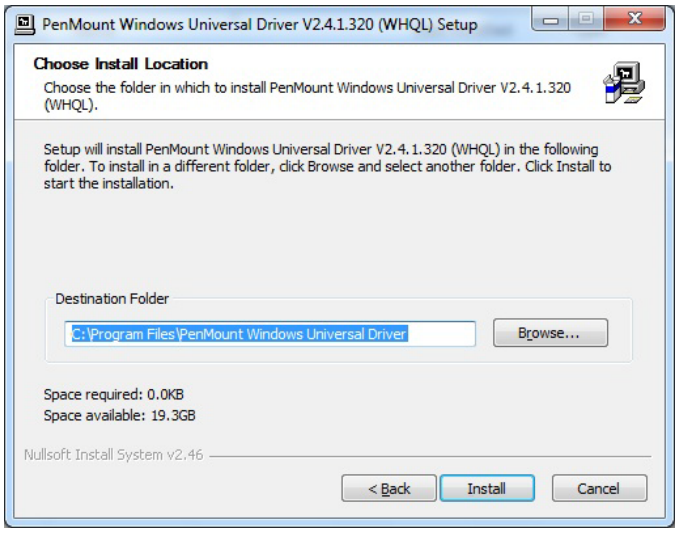
3. Click **Next**


PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup
Welcome to the PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup Wizard
This wizard will guide you through the installation of PenMount Windows Universal Driver V2.4.1.320 (WHQL).
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

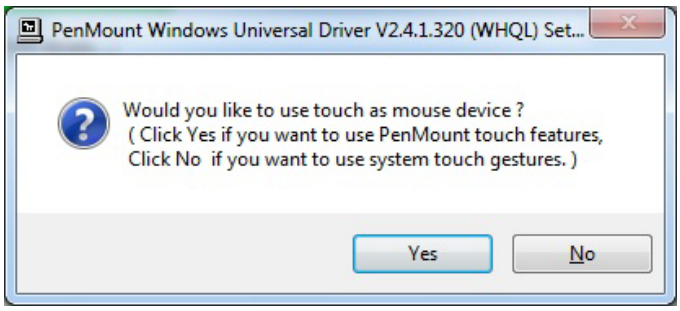
4. Click **I Agree**


PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup
License Agreement
Please review the license terms before installing PenMount Windows Universal Driver V2.4.1.320 (WHQL).
Press Page Down to see the rest of the agreement.
PLEASE READ THE LICENSE AGREEMENT
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Windows Universal Driver V2.4.1.320 (WHQL).
Nullsoft Install System v2.46
< Back
I Agree
Cancel

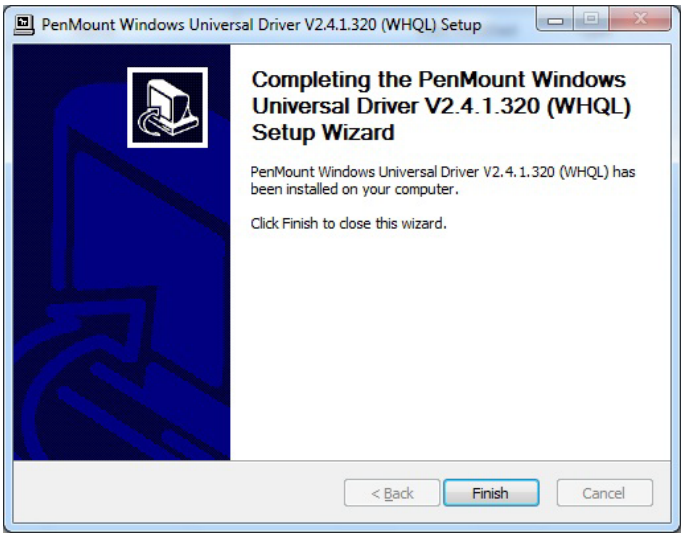
5. Click **Install**


PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup
Choose Install Location
Choose the folder in which to install PenMount Windows Universal Driver V2.4.1.320 (WHQL).
Setup will install PenMount Windows Universal Driver V2.4.1.320 (WHQL) in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files\PenMount Windows Universal Driver
Browse...
Space required: 0.0KB
Space available: 19.3GB
Nullsoft Install System v2.46
< Back
Install
Cancel

6. Click **Finish**


PenMount Windows Universal Driver V2.4.1.320 (WHQL) Set...
Would you like to use touch as mouse device ?
(Click Yes if you want to use PenMount touch features,
Click No if you want to use system touch gestures.)
Yes
No

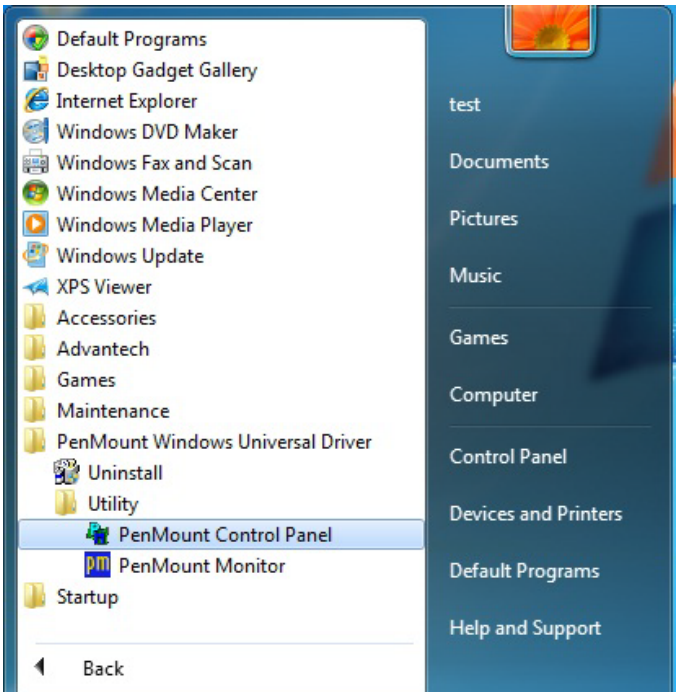
7. Click **Finish**


PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup
Completing the PenMount Windows Universal Driver V2.4.1.320 (WHQL) Setup Wizard
PenMount Windows Universal Driver V2.4.1.320 (WHQL) has been installed on your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel

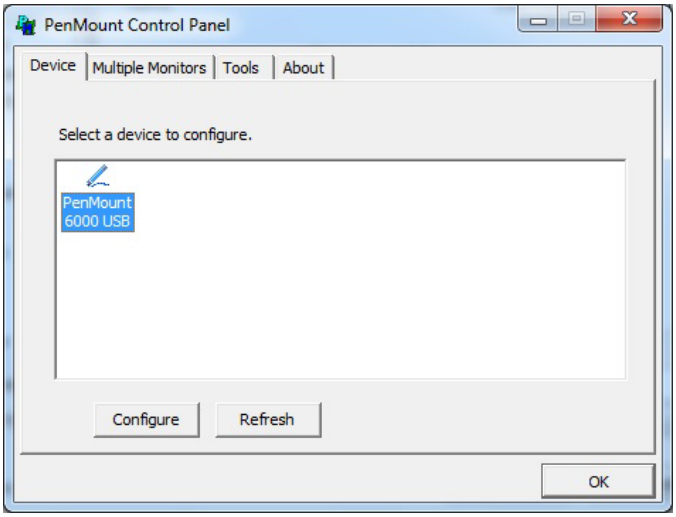
B.10 Touchscreen Calibration

Follow the steps below to install the touchscreen driver:

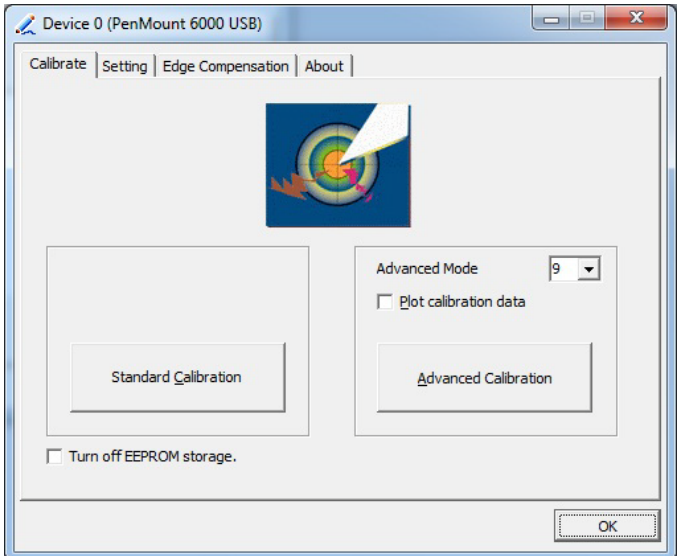
1. Launch PenMount Control Panel tool



2. Double click **PenMount 6000 USB**



3. Follow the process to calibration touch screen
4. Click **OK** to finish calibration



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